UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION 6

IN THE MATTER OF: Gulfco Marine Maintenance Superfund Site Freeport, Brazoria County, Texas	**ADMINISTRATIVE SETTLEMENT AGREEMENT AND ORDER ON CONSENT FOR REMOVAL ACTION**
The Dow Chemical Company, LDL Coastal Limited, L.P., & Chromalloy American Corporation	U.S. EPA Region 6 CERCLA Docket No. 06-13-10
Respondents	Proceeding Under Sections 104, 106(a), 107 and 122 of the Comprehensive Environmental Response, Compensation, and Liability Act, as amended, 42 U.S.C. §§ 9604, 9606(a), 9607 and 9622

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I. JURISDICTION AND GENERAL PROVISIONS

1. This Administrative Settlement Agreement and Order on Consent for Removal Action ("Settlement Agreement") is entered into voluntarily by the United States Environmental Protection Agency ("EPA") and The Dow Chemical Company, LDL Coastal Limited, L.P., and Chromalloy American Corporation ("Respondents"). This Settlement Agreement provides for the performance of a removal action by Respondents and the reimbursement of Oversight Response Costs incurred by the United States at or in connection with the removal action pursuant to this Settlement Agreement at the "Gulfco Marine Maintenance Superfund Site" (the "Site") generally located approximately three miles northeast of Freeport, Brazoria County, Texas, at 906 Marlin Avenue.

2. This Settlement Agreement is issued under the authority vested in the President of the United States by Sections 104, 106(a), 107 and 122 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 U.S.C. §§ 9604, 9606(a), 9607 and 9622, as amended ("CERCLA").

3. EPA has notified the State of Texas (the "State") of this action pursuant to Section 106(a) of CERCLA, 42 U.S.C. § 9606(a).

4. EPA and Respondents recognize that this Settlement Agreement has been negotiated in good faith and that the actions undertaken by Respondents in accordance with this Settlement Agreement do not constitute an admission of any liability. Respondents do not admit, and retain the right to controvert in any subsequent proceedings other than proceedings to implement or enforce this Settlement Agreement, the validity of the findings of facts, conclusions of law, determinations in Sections IV and V of this Settlement Agreement, and the statements contained in the Action Memorandum attached as Appendix A of this Settlement Agreement. Respondents agree to comply with and be bound by the terms of this Settlement Agreement and further agree that they will not contest the basis or validity of this Settlement Agreement or its terms.

II. PARTIES BOUND

5. This Settlement Agreement applies to and is binding upon EPA and upon Respondents and their heirs, successors and assigns. Any change in ownership or corporate status of a Respondent including, but not limited to, any transfer of assets or real or personal property shall not alter such Respondent's responsibilities under this Settlement Agreement.

6. Respondents are jointly and severally liable for carrying out all activities required by this Settlement Agreement. In the event of the insolvency or other failure of any one or more Respondents to implement the requirements of this Settlement Agreement, the remaining Respondents shall complete all such requirements.

7. Respondents shall ensure that their contractors, subcontractors, and representatives receive a copy of this Settlement Agreement and comply with this Settlement Agreement. Respondents shall be responsible for any noncompliance with this Settlement Agreement.

III. DEFINITIONS

8. Unless otherwise expressly provided in this Settlement Agreement, terms used in this Settlement Agreement which are defined in CERCLA or in regulations promulgated under CERCLA shall have the meaning assigned to them in CERCLA or in such regulations. Whenever terms listed below are used in this Settlement Agreement or in the appendices attached hereto and incorporated hereunder, the following definitions shall apply:

a. "Action Memorandum" shall mean the EPA Action Memorandum relating to the Site signed on September 13, 2010, by the Regional Administrator, EPA Region 6, or his/her delegate, and all attachments thereto. The "Action Memorandum" is attached as Appendix A.

b. "CERCLA" shall mean the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, 42 U.S.C. §§ 9601, *et seq*.

c. "Day" shall mean a calendar day. In computing any period of time under this Settlement Agreement, where the last day would fall on a Saturday, Sunday, or Federal holiday, the period shall run until the close of business of the next working day.

d. "Effective Date" shall be the effective date of this Settlement Agreement as provided in Section XXX.

e. "EPA" shall mean the United States Environmental Protection Agency and any successor departments or agencies of the United States.

f. "Interest" shall mean interest at the rate specified for interest on investments of the EPA Hazardous Substance Superfund established by 26 U.S.C. § 9507, compounded annually on October 1 of each year, in accordance with 42 U.S.C. § 9607(a). The applicable rate of interest shall be the rate in effect at the time the interest accrues. The rate of interest is subject to change on October 1 of each year.

g. "National Contingency Plan" or "NCP" shall mean the National Oil and Hazardous Substances Pollution Contingency Plan promulgated pursuant to Section 105 of CERCLA, 42 U.S.C. § 9605, codified at 40 C.F.R. Part 300, and any amendments thereto.

h. "Oversight Response Costs" shall mean all costs, not inconsistent with the National Contingency Plan, including, but not limited to, direct and indirect costs, that the United States incurs from the Effective Date of this Settlement Agreement in

reviewing or developing plans, reports and other items pursuant to this Settlement Agreement, verifying the Work, or otherwise implementing, overseeing, or enforcing this Settlement Agreement, including but not limited to, payroll costs, contractor costs, travel costs, laboratory costs, the costs incurred pursuant to Paragraph 45 (costs and attorneys fees and any monies paid to secure access, including the amount of just compensation), and Paragraph 80 (work takeover).

i. "Paragraph" shall mean a portion of this Settlement Agreement identified by an Arabic numeral.

j. "Parties" shall mean EPA and Respondents.

k. "RCRA" shall mean the Solid Waste Disposal Act, as amended, 42 U.S.C. §§ 6901, *et seq.* (also known as the Resource Conservation and Recovery Act).

l. "Respondents" shall mean those Parties identified in Appendix B.

m. "Section" shall mean a portion of this Settlement Agreement identified by a Roman numeral.

n. "Settlement Agreement" shall mean this Administrative Settlement Agreement and Order on Consent for Removal Action and all appendices attached hereto (listed in Section XXIX). In the event of conflict between this Settlement Agreement and any appendix, this Settlement Agreement shall control.

o. "Site" shall mean the Gulfco Marine Maintenance Superfund Site, encompassing approximately 40 acres, located at 906 Marlin Avenue in Freeport, Brazoria County, Texas and depicted generally on the map attached as Appendix C.

p. "State" shall mean the State of Texas.

q. "TCEQ" shall mean the Texas Commission on Environmental Quality and any successor departments or agencies of the State.

r. "Waste Material" shall mean 1) any "hazardous substance" under Section 101(14) of CERCLA, 42 U.S.C. § 9601(14); 2) any pollutant or contaminant under Section 101(33) of CERCLA, 42 U.S.C. § 9601(33); 3) any "solid waste" under Section 1004(27) of RCRA, 42 U.S.C. § 6903(27).

s. "Work" shall mean all activities Respondents are required to perform under this Settlement Agreement.

t. "Work Plan" shall mean the work plan for implementation of the removal action, as set forth in Appendix D to this Settlement Agreement, and any modifications made thereto in accordance with this Settlement Agreement.

IV. FINDINGS OF FACT

9. The Site, as indicated in Appendix A, is an inactive barge cleaning facility where waste disposal occurred. The Site consists of approximately 40 acres located one mile east of Highway 332 at 906 Marlin Avenue in Freeport, Brazoria County, Texas. The geographic coordinates are 28°58'07" north latitude, and 95°17'26" west longitude.

10. The Site borders 2170 feet of the north shore of the Intracoastal Waterway between Oyster Creek on the east and the Old Brazos River Channel and the Dow Barge Canal on the west. The Site is within an area of 100-year coastal flood with velocity (wave action). The southern part of the Site, south of Marlin Avenue, drains toward the south where it enters into the Intracoastal Waterway. Drainage from the Site area north of Marlin Avenue is to the northeast into adjacent wetlands. These wetlands extend approximately 0.48 miles to Oyster Creek.

11. The Site was operated by Gulfco Marine Maintenance, Inc., from 1971 through 1979. Fish Engineering and Construction, Inc., owned the Site from 1979 until 1989, when the majority of the Site, including Lots 21 through 25, and Lots 55, 57, and 58 (approximately 35 acres), was sold to Hercules Offshore Corporation (later Hercules Marine Services Corporation). LDL Coastal Limited, L.P. acquired Hercules Marine Services' interest in the Site in a bankruptcy sale in 1999. The remaining lot, Lot 56 (approximately five acres), was sold to Jack Palmer and Ron Hudson in 1999.

12. The primary Site operations consisted of draining, cleaning, servicing, and repair of various chemical barges. The barge repair work included welding, sandblasting, and painting. The Site also included three surface impoundments, which were earthen pits with natural clay liners located on Lot 56. Beginning in 1971, the impoundments were used for storage of waste oils, caustics, various organic chemicals, and waste wash waters generated during barge cleaning activities. The impoundments were deactivated in October 1981, and later operations used floating barges and above ground storage tanks to store the barge wash waters.

13. According to a letter from Fish Engineering & Construction, Inc., to the Texas Air Control Board, dated April 14, 1982, between June 1980 and August 1981, the barge cargoes for washing at the Site included: fuel oil, crude oil, diesel, oil residues, gas oil, benzene, xylene, toluene, cyclo-hexane, cumene, ethyl benzene, styrene, hydrochloric acid, glycols, methanol, butanol, chloroform, perchloroethylene, vinyl chloride, acetone, methyl ethyl keytone, and vinyl acetate among other barge cargoes.

14. According to the "Site Inspection Report", dated July 15, 1980, prepared by EPA, discharges occurred from the waste impoundments in July 1974 and August 1979.

15. According to the "Screening Site Inspection Report", dated July 2000 ("SSI Report"), prepared by the Texas Natural Resource Conservation Commission (TNRCC), and the "HRS Documentation Record, Gulfco Marine Maintenance Site", dated February 2002 ("HRS Report"), prepared by TNRCC, the site included two barge slips, a dry dock area,

and various above ground tanks used for storage of product drained from the barges prior to cleaning.

16. According to the HRS Report, the Intracoastal Waterway is considered a fishery. Photographs taken during the January 2000 SSI sampling event documented the Intracoastal Waterway as being a fishery.

17. Respondents are conducting a Remedial Investigation/Feasibility Study ("RI/FS") pursuant to an Amended Unilateral Administrative Order effective January 31, 2008 ("UAO").

18. As part of the EPA-approved Remedial Investigation at the Site, studies and sampling were conducted regarding the above-ground storage tanks ("ASTs") and the surface impoundments.

19. An AST Tank Farm, consisting of 14 tanks located within two concrete containment areas, is located in the southern part of the Site. This area was used for storage of product heels associated with barge cleaning operations. Four of the ASTs contain hazardous substances.

20. According to the "Documentation of Aboveground Storage Tank Sampling Activities, Gulfco Marine Maintenance Site, Freeport, Texas" letter dated April 4, 2007, from Pastor, Behling, and Wheeler, LLC, to EPA ("Tank Sampling Activities Letter"), Tank Number 2 contains organic/aqueous mixture and sandy debris solids. Tank No. 2 contained listed hazardous substances as follows:

- Tank No. 2 aqueous phase sample (total concentration) – 1,2-dichloroethane (1,2-DCA) (7.97 mg/L) and trichloroethene (TCE)(0.851 J mg/L – J flagged as an estimated concentration);
- Tank No. 2 organic phase sample (TCLP concentration) – 1,2-DCA (8.4 mg/L), TCE (1.52 mg/L), and vinyl chloride (0.247 J mg/L);
- Tank No. 2 solids phase sample (TCLP concentration) – chloroform (20.7 mg/L), 1,2-DCA (203 mg/L), tetrachloroethene (PCE) (55.7 mg/L),and TCE (205 mg/L);

21. According to the Tank Sampling Activities Letter, Tank Number 13 contains oily sludge. Tank No. 13 contained listed hazardous substances as follows:

- Tank No. 13 sample (TCLP concentration) –1,2-DCA (2.73 J mg/L), PCE (47.7 mg/L), TCE (2.98 J mg/L), and vinyl chloride (0.988 J mg/L);

22. According to the Tank Sampling Activities Letter, Tank Number 18 contains light organic phase. Tank No. 18 contained listed hazardous substances as follows:

- Tank No. 18 sample (TCLP concentration) – chloroform (216 mg/L), and heptachlor (0.029 J mg/L).

23. According to the Tank Sampling Activities Letter, Tank Number 21 contains oily water. Tank No. 21 contained listed hazardous substances as follows:

- Tank No. 21 sample (TCLP concentration) – chloroform (2,100 mg/L), and 1,2-DCA (224 mg/L).

24. The hazardous substances identified above, under certain conditions of dose, duration, or extent of exposure, may produce adverse health and environmental effects. A number of these hazardous substances have been identified as probable human carcinogens. The environmental effects may include reduced survival, growth, or reproduction.

25. According to the memorandum "Gulfco Marine Maintenance Superfund Site, Condition of Storage Tanks and Former Impoundment Cap", dated June 21, 2010, from Gary Miller to Carlos Sanchez, an inspection of the tanks conducted on March 9, 2010, found that there has been additional deterioration and corrosion of the tanks, and the corrosion will continue as a result of the site's location near the coast, and will likely result in future releases as the tanks continue to deteriorate. In addition, the site's location within the 100-year floodplain and further tank deterioration make it likely that additional tanks could be washed away in future hurricanes.

26. On September 13, 2010, the Action Memorandum was signed.

27. The Site was proposed for listing on the National Priorities List ("NPL") on September 5, 2002 (67 FR 56794), and was placed on the NPL effective May 30, 2003, in a final rulemaking published on April 30, 2003 (68 FR 23077).

28. Respondent LDL Coastal Limited, L.P. is a domestic limited partnership incorporated in the state of Texas. LDL Coastal Limited L.P. is the current owner of certain parts of the Site, including Tract numbers 21, 21A, 21B, 22, 23, 24, 25, 55, 57, and 58 of Subdivision Number 8, Brazos Coast Investment Company Subdivision.

29. Respondent Chromalloy American Corporation is a corporation incorporated in the state of Delaware, and is a past owner of the Site.

30. Respondent The Dow Chemical Company is a corporation incorporated in the state of Delaware. The Dow Chemical Company arranged for disposal or treatment of hazardous substances, which were owned or possessed by said company, at the Site.

V. CONCLUSIONS OF LAW AND DETERMINATIONS

31. Based on the Findings of Fact set forth above, and the Administrative Record supporting this removal action, EPA has determined that:

a. The Gulfco Marine Maintenance Superfund Site is a "facility" as defined by Section 101(9) of CERCLA, 42 U.S.C. § 9601(9).

b. The contamination found at the Site, as identified in the Findings of Fact above, includes "hazardous substances" as defined by Section 101(14) of CERCLA, 42 U.S.C. § 9601(14).

c. Each Respondent is a "person" as defined by Section 101(21) of CERCLA, 42 U.S.C. § 9601(21).

d. Each Respondent is a responsible party under Section 107(a) of CERCLA, 42 U.S.C. § 9607(a), and is jointly and severally liable for performance of response action and for Oversight Response Costs at the Site. Each of the Respondents is a "person" within the meaning of Section 101(21) of CERCLA, 42 U.S.C. § 9601(21). Respondent LDL Coastal Limited, L.P. is the current owner of certain parts of the Site, including Tract numbers 21, 21A, 21B, 22, 23, 24, 25, 55, 57, and 58 of Subdivision Number 8, Brazos Coast Investment Company Subdivision formerly utilized for cleaning of barges containing hazardous substances and is thus a responsible party within the meaning of Section 107(a)(1) of CERCLA, 42 U.S.C. § 9607(a)(1). Respondent Chromalloy American Corporation, is a past owner of the Site at the time of disposal of hazardous substances at the Site and is thus a responsible party within the meaning of Section 107(a)(2) of CERCLA, 42 U.S.C. § 9607(a)(2). Respondent The Dow Chemical Company arranged for the disposal or treatment of materials containing hazardous substances which came to be disposed of at the Site, and is accordingly a responsible party within the meaning of Section 107(a)(3) of CERCLA, 42 U.S.C. § 9607(a)(3).

e. The conditions described in the Findings of Fact (Section IV) above constitute an actual or threatened "release" of a hazardous substance from the facility as defined by Section 101(22) of CERCLA, 42 U.S.C.§ 9601(22).

f. The removal action required by this Settlement Agreement is necessary to protect the public health, welfare, or the environment and, if carried out in compliance with the terms of this Settlement Agreement, will be consistent with the NCP, as provided in Section 300.700(c)(3)(ii) of the NCP.

VI. SETTLEMENT AGREEMENT AND ORDER

32. Based upon the foregoing Findings of Fact, Conclusions of Law, Determinations, and the Administrative Record for this Site, it is hereby Ordered and Agreed that Respondents shall comply with all provisions of this Settlement Agreement, including, but not limited to, all attachments to this Settlement Agreement and all documents incorporated by reference into this Settlement Agreement.

VII. DESIGNATION OF CONTRACTOR, PROJECT COORDINATOR, AND ON-SCENE COORDINATOR

33. Respondents shall retain one or more contractors to perform the Work. Contractors and subcontractors who have been previously approved to work at the Site under the UAO for

RI/FS are hereby approved to perform the Work under this Settlement Agreement. Respondents shall notify EPA in writing of the name(s) of these contractors and subcontractors within thirty (30) days of the Effective Date. Respondents shall also notify EPA in writing of the name(s) and qualification(s) of any other contractor(s) or subcontractor(s) subsequently retained by Respondents to perform the Work but who had not been previously approved by EPA under the UAO for RI/FS at least 10 days prior to commencement of such Work. EPA retains the right to disapprove of any or all of the contractors and/or subcontractors retained by Respondents. If EPA disapproves of a selected contractor, Respondents shall retain a different contractor and shall notify EPA of that contractor's name and qualifications within 20 days of EPA's disapproval. For any new contractor that has not already been approved to work at the Site under the UAO, the proposed contractor must demonstrate compliance with ANSI/ASQC E-4-1994, "Specifications and Guidelines for Quality Systems for Environmental Data Collection and Environmental Technology Programs" (American National Standard, January 5, 1995), by submitting a copy of the proposed contractor's Quality Management Plan ("QMP"). The QMP should be prepared in accordance with "EPA Requirements for Quality Management Plans (QA/R-2)" (EPA/240/B0-1/002), or equivalent documentation as required by EPA. Any decision not to require submission of the contractor's QMP should be documented in a memorandum from the OSC and Regional QA personnel to the Site file. The subcontractor(s) can work under the hiring contractor's QMP and does not have to have an individual QMP.

34. Respondents designate Eric Pastor of Pastor, Behling, & Wheeler, LLC at 2201 Double Creek Drive, Suite 4004, Round Rock, Texas, 78664 (telephone 512-671-3434) as their Project Coordinator, who shall be responsible for administration of all actions by Respondents required by this Settlement Agreement. To the greatest extent possible, the Project Coordinator shall be present on Site or readily available during Site work. By signing this Settlement Agreement, EPA approves Respondents' Project Coordinator but retains the right to disapprove of the designated Project Coordinator in the future. If EPA disapproves of the designated Project Coordinator, Respondents shall retain a different Project Coordinator and shall notify EPA of that person's name, address, telephone number, and qualifications within 20 days following EPA's disapproval. Receipt by Respondents' Project Coordinator of any notice or communication from EPA relating to this Settlement Agreement shall constitute receipt by all Respondents.

35. EPA has designated Gary Miller of the Remedial Branch, Region 6, and Rita Engblom of the Emergency Response Branch, Region 6, as its On-Scene Coordinators ("OSC"). Except as otherwise provided in this Settlement Agreement, Respondents shall direct all submissions required by this Settlement Agreement to the OSC at 1445 Ross Avenue, Dallas, Texas 75202.

36. EPA and Respondents shall have the right, subject to Paragraph 34, to change their respective designated OSC or Project Coordinator. Respondents shall notify EPA 5 days before such a change is made. The initial notification may be made orally, but shall be promptly followed by a written notice.

VIII. WORK TO BE PERFORMED

37. Respondents shall perform, at a minimum, all actions necessary to implement the Action Memorandum and the Work Plan attached hereto and incorporated as Appendix D. The actions to be implemented generally include, but are not limited to, the following:

- Removal of Above-ground storage tanks that contain hazardous substances from the barge cleaning operations

38. Work Plan and Implementation.

a. The Work Plan for performing the removal action, generally described in Paragraph 37 above, includes a description of, and an expeditious schedule for, the actions required by this Settlement Agreement. The Work Plan is attached as Appendix D. By signing this Settlement Agreement, EPA approves the attached Work Plan. In addition, Respondents shall conduct the Work under this Settlement Agreement in accordance with the Quality Assurance Project Plan ("QAPP"). The QAPP should be prepared in accordance with "EPA Requirements for Quality Assurance Project Plans (QA/R-5)" (EPA/240/B-01/003, March 2001), and "EPA Guidance for Quality Assurance Project Plans (QA/G-5)" (EPA/600/R-98/018, February 1998). The QAPP, prepared for the RI/FS under the UAO and previously approved by EPA, can be used for the removal action to be conducted under this Settlement Agreement.

b. Respondents shall implement the Work Plan as approved by EPA in accordance with the schedule contained therein. The Work Plan, the schedule, and any subsequent modifications shall be incorporated into and become fully enforceable under this Settlement Agreement.

c. Respondents shall not commence any Work except in conformance with the terms of this Settlement Agreement.

39. Health and Safety Plan. Respondents shall implement the Health and Safety Plan as provided in the Work Plan. This plan was prepared in accordance with EPA's Standard Operating Safety Guide (PUB 9285.1-03, PB 92-963414, June 1992). In addition, the plan complies with all currently applicable Occupational Safety and Health Administration ("OSHA") regulations found at 29 C.F.R. Part 1910. Respondents shall implement the Health and Safety Plan during the pendency of the removal action.

40. Quality Assurance and Sampling.

a. Respondents shall perform all sampling and analyses pursuant to this Settlement Agreement and shall conform to EPA direction, approval, and guidance regarding sampling, quality assurance/quality control ("QA/QC"), data validation, and chain of custody procedures that have been previously approved by EPA and implemented by Respondents for the RI/FS under the UAO. Respondents shall ensure that the laboratory used to perform the analyses participates in a QA/QC program that

complies with the appropriate EPA guidance. Respondents shall follow, as appropriate, "Quality Assurance/Quality Control Guidance for Removal Activities: Sampling QA/QC Plan and Data Validation Procedures" (OSWER Directive No. 9360.4-01, April 1, 1990), as guidance for QA/QC and sampling. Respondents shall only use laboratories that have a documented Quality System that complies with ANSI/ASQC E-4 1994, "Specifications and Guidelines for Quality Systems for Environmental Data Collection and Environmental Technology Programs" (American National Standard, January 5, 1995), and "EPA Requirements for Quality Management Plans (QA/R-2) (EPA/240/B-01/002, March 2001)," or equivalent documentation as determined by EPA. EPA may consider laboratories accredited under the National Environmental Laboratory Accreditation Program ("NELAP") as meeting the Quality System requirements.

b. Upon request by EPA, Respondents shall have a laboratory analyze samples submitted by EPA for QA monitoring. Respondents shall provide to EPA within ten (10) days of request, the QA/QC procedures followed by all sampling teams and laboratories performing data collection and/or analysis.

c. Upon request by EPA, Respondents shall allow EPA or its authorized representatives to take split and/or duplicate samples. Respondents shall notify EPA not less than fourteen (14) days in advance of any sample collection activity, unless shorter notice is agreed to by EPA. EPA shall have the right to take any additional samples that EPA deems necessary. Upon request, EPA shall allow Respondents to take split or duplicate samples of any samples it takes as part of its oversight of Respondents' implementation of the Work.

41. Reporting.

a. Respondents shall submit a written progress report to EPA concerning actions undertaken pursuant to this Settlement Agreement by the 15th day of every month following the Effective Date of this Settlement Agreement until termination of this Settlement Agreement, unless otherwise directed in writing by the OSC. These reports shall describe all significant developments during the preceding period, including the actions performed and any problems encountered, analytical data received during the reporting period, and the developments anticipated during the next reporting period, including a schedule of actions to be performed, anticipated problems, and planned resolutions of past or anticipated problems.

b. Respondents shall submit five (5) copies of all plans, reports or other submissions required by this Settlement Agreement or the Work Plan. Upon request by EPA, Respondents shall submit such documents in electronic form.

c. Respondents who own or control property at the Site shall, at least thirty (30) days prior to the conveyance of any interest in real property at the Site, give written notice to the transferee that the property is subject to this Settlement Agreement and written notice to EPA and the State of the proposed conveyance, including the name and

address of the transferee. Respondents who own or control property at the Site also agree to require that their successors comply with the immediately proceeding sentence and Sections IX (Site Access) and X (Access to Information).

42. Final Report. Within forty-five (45) days after completion of all Work required by this Settlement Agreement, Respondents shall submit for EPA review and approval a final report summarizing the actions taken to comply with this Settlement Agreement. The final report shall conform, at a minimum, with the requirements set forth in Section 300.165 of the NCP entitled "OSC Reports" and the "Superfund Removal Procedures: Removal Response Reporting – POLREPS and OSC Reports" (OSWER Directive No. 9360.3-03, June 1, 1994). The final report shall include a good faith estimate of total costs or a statement of actual costs incurred in complying with the Settlement Agreement, a listing of quantities and types of materials removed off-Site or handled on-Site, a discussion of removal and disposal options considered for those materials, a listing of the ultimate destination(s) of those materials, a presentation of the analytical results of all sampling and analyses performed, and accompanying appendices containing all relevant documentation generated during the removal action (*e.g.*, manifests, invoices, bills, contracts, and permits). The final report shall also include the following certification signed by a person who supervised or directed the preparation of that report:

"Under penalty of law, I certify that to the best of my knowledge, after appropriate inquiries of all relevant persons involved in the preparation of the report, the information submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

43. Off-Site Shipments.

a. Respondents shall, prior to any off-Site shipment of Waste Material from the Site to an out-of-state waste management facility, provide written notification of such shipment of Waste Material to the appropriate state environmental official in the receiving facility's state and to the On-Scene Coordinator. However, this notification requirement shall not apply to any off-Site shipments when the total volume of all such shipments will not exceed 10 cubic yards.

i. Respondents shall include in the written notification the following information: 1) the name and location of the facility to which the Waste Material is to be shipped; 2) the type and quantity of the Waste Material to be shipped; 3) the expected schedule for the shipment of the Waste Material; and 4) the method of transportation. Respondents shall notify the state in which the planned receiving facility is located of major changes in the shipment plan, such as a decision to ship the Waste Material to another facility within the same state, or to a facility in another state.

ii. The identity of the receiving facility and state will be determined by Respondents following the award of the contract for the removal action. Respondents shall

provide the information required by Paragraph 43(a) and 43(b) after the award of the contract and at least ten (10) days before the Waste Material is actually shipped.

b. Before shipping any hazardous substances, pollutants, or contaminants from the Site to an off-site location, Respondents shall obtain EPA's certification that the proposed receiving facility is operating in compliance with the requirements of CERCLA Section 121(d)(3), 42 U.S.C. § 9621(d)(3), and 40 C.F.R. § 300.440. Respondents shall only send hazardous substances, pollutants, or contaminants from the Site to an off-site facility that complies with the requirements of the statutory provision and regulation cited in the preceding sentence. Potential receiving facilities identified in the Work Plan satisfy this provision and require no additional certification.

IX. SITE ACCESS

44. If the Site, or any other property where access is needed to implement this Settlement Agreement, is owned or controlled by any of the Respondents, such Respondents shall, commencing on the Effective Date, provide EPA, and its representatives, including contractors, with access at all reasonable times to the Site, or such other property, for the purpose of conducting any activity related to this Settlement Agreement.

45. Where any action under this Settlement Agreement is to be performed in areas owned by or in possession of someone other than Respondents, Respondents shall use their best efforts to obtain all necessary access agreements within seven (7) days after the Effective Date, or as otherwise specified in writing by the OSC. Respondents shall immediately notify EPA if after using their best efforts they are unable to obtain such agreements. For purposes of this Paragraph, "best efforts" includes the payment of reasonable sums of money in consideration of access. Respondents shall describe in writing their efforts to obtain access. EPA may then assist Respondents in gaining access, to the extent necessary to effectuate the response actions described in this Settlement Agreement, using such means as EPA deems appropriate. Respondents shall reimburse EPA for all costs and attorney's fees incurred by the United States in obtaining such access, in accordance with the procedures in Section XV (Payment of Oversight Response Costs).

46. Notwithstanding any provision of this Settlement Agreement, EPA and the State retain all of their access authorities and rights, as well as all of their rights to require land/water use restrictions, including enforcement authorities related thereto, under CERCLA, RCRA, and any other applicable statutes or regulations.

X. ACCESS TO INFORMATION

47. Respondents shall provide to EPA and the State, upon request, copies of all documents and information within their possession or control or that of their contractors or agents relating to activities at the Site or to the implementation of this Settlement Agreement, including, but not limited to, sampling, analysis, chain of custody records, manifests, trucking logs, receipts, reports, sample traffic routing, correspondence, or other

documents or information related to the Work. Respondents shall also make available to EPA and the State, for purposes of investigation, information gathering, or testimony, their employees, agents, or representatives with knowledge of relevant facts concerning the performance of the Work.

48. Respondents may assert business confidentiality claims covering part or all of the documents or information submitted to EPA under this Settlement Agreement to the extent permitted by and in accordance with Section 104(e)(7) of CERCLA, 42 U.S.C. § 9604(e)(7), and 40 C.F.R. § 2.203(b). Documents or information determined to be confidential by EPA will be afforded the protection specified in 40 C.F.R. Part 2, Subpart B. If no claim of confidentiality accompanies documents or information when they are submitted to EPA or if EPA has notified Respondents that the documents or information are not confidential under the standards of Section 104(e)(7) of CERCLA or 40 C.F.R. Part 2, Subpart B, the public may be given access to such documents or information without further notice to Respondents.

49. Respondents may assert that certain documents, records and other information are privileged under the attorney-client privilege or any other privilege recognized by federal law. If the Respondents assert such a privilege in lieu of providing documents, they shall provide EPA with the following: 1) the title of the document, record, or information; 2) the date of the document, record, or information; 3) the name and title of the author of the document, record, or information; 4) the name and title of each addressee and recipient; 5) a description of the contents of the document, record, or information; and 6) the privilege asserted by Respondents. However, no documents, reports or other information created or generated pursuant to the requirements of this Settlement Agreement shall be withheld on the grounds that they are privileged.

50. No claim of confidentiality shall be made with respect to any data, including, but not limited to, all sampling, analytical, monitoring, hydrogeologic, scientific, chemical, or engineering data, or any other documents or information evidencing conditions at or around the Site.

XI. RECORD RETENTION

51. Until 10 years after Respondents' receipt of EPA's notification pursuant to Section XXVIII (Notice of Completion of Work), each Respondent shall preserve and retain all non-identical copies of records and documents (including records or documents in electronic form) now in its possession or control or which come into its possession or control that relate in any manner to the performance of the Work or the liability of any person under CERCLA with respect to the Site, regardless of any corporate retention policy to the contrary. Until 10 years after Respondents' receipt of EPA's notification pursuant to Section XXVIII (Notice of Completion of Work), Respondents shall also instruct their contractors and agents to preserve all documents, records, and information of whatever kind, nature or description relating to performance of the Work.

52. At the conclusion of this document retention period, Respondents shall notify EPA and the State at least 90 days prior to the destruction of any such records or documents, and, upon request by EPA or the State, Respondents shall deliver any such records or documents to EPA or the State. Respondents may assert that certain documents, records and other information are privileged under the attorney-client privilege or any other privilege recognized by federal law. If Respondents assert such a privilege, they shall provide EPA or the State with the following: 1) the title of the document, record, or information; 2) the date of the document, record, or information; 3) the name and title of the author of the document, record, or information; 4) the name and title of each addressee and recipient; 5) a description of the subject of the document, record, or information; and 6) the privilege asserted by Respondents. However, no documents, reports or other information created or generated pursuant to the requirements of this Settlement Agreement shall be withheld on the grounds that they are privileged.

53. Each Respondent hereby certifies individually that to the best of its knowledge and belief, after thorough inquiry, it has not altered, mutilated, discarded, destroyed or otherwise disposed of any records, documents or other information (other than identical copies) relating to its potential liability regarding the Site since notification of potential liability by EPA or the State or the filing of suit against it regarding the Site and that it has fully complied with any and all EPA requests for information pursuant to Sections 104(e) and 122(e) of CERCLA, 42 U.S.C. §§ 9604(e) and 9622(e), and Section 3007 of RCRA, 42 U.S.C. § 6927.

XII. COMPLIANCE WITH OTHER LAWS

54. Respondents shall perform all actions required pursuant to this Settlement Agreement in accordance with all applicable state and federal laws and regulations except as provided in Section 121(e) of CERCLA, 42 U.S.C. § 6921(e), and 40 C.F.R. §§ 300.400(e) and 300.415(j). In accordance with 40 C.F.R. § 300.415(j), all on-Site actions required pursuant to this Settlement Agreement shall, to the extent practicable, as determined by EPA, considering the exigencies of the situation, attain applicable or relevant and appropriate requirements ("ARARs") under federal environmental or state environmental or facility siting laws. Respondents shall identify ARARs in the Work Plan subject to EPA approval.

XIII. EMERGENCY RESPONSE AND NOTIFICATION OF RELEASES

55. In the event of any action or occurrence during performance of the Work which causes or threatens a release of Waste Material from the Site that constitutes an emergency situation or may present an immediate threat to public health or welfare or the environment, Respondents shall immediately take all appropriate action. Respondents shall take these actions in accordance with all applicable provisions of this Settlement Agreement, including, but not limited to, the Health and Safety Plan, in order to prevent, abate or minimize such release or endangerment caused or threatened by the release. Respondents shall also immediately notify the OSC or, in the event of his/her unavailability, the Regional Duty Officer, Emergency Planning and Response Branch,

EPA Region 6, 214-665-3166, and the EPA Regional Emergency 24-hour telephone number, 1-866-372-7745, of the incident or Site conditions. In the event that Respondents fail to take appropriate response action as required by this Paragraph, and EPA takes such action instead, Respondents shall reimburse EPA all costs of the response action not inconsistent with the NCP pursuant to Section XV (Payment of Oversight Response Costs).

56. In addition, in the event of any release of a hazardous substance from the Site, Respondents shall immediately notify the OSC at (866) 372-7745. In the event of a release of a hazardous substance from the Site that requires reporting to the National Response Center pursuant to Section 103(a) of CERCLA, 42 U.S.C. § 9603(a), Respondents shall immediately notify the National Response Center at (800) 424-8802 and then the OSC at (866) 372-7745. Respondents shall submit a written report to EPA within 7 days after a release of a hazardous substance from the Site that requires reporting to the National Response Center pursuant to Section 103(a) of CERCLA, 42 U.S.C. § 9603(a), setting forth the events that occurred and the measures taken or to be taken to mitigate any release or endangerment caused or threatened by the release and to prevent the reoccurrence of such a release. This reporting requirement is in addition to, and not in lieu of, reporting under Section 103(c) of CERCLA, 42 U.S.C. § 9603(c), and Section 304 of the Emergency Planning and Community Right-To-Know Act of 1986, 42 U.S.C. § 11004, *et seq.*

XIV. AUTHORITY OF ON-SCENE COORDINATOR

57. The OSC shall be responsible for overseeing Respondents' implementation of this Settlement Agreement. The OSC shall have the authority vested in an OSC by the NCP, including the authority to halt, conduct, or direct any Work required by this Settlement Agreement, or to direct any other removal action undertaken at the Site. Absence of the OSC from the Site shall not be cause for stoppage of work unless specifically directed by the OSC.

XV. PAYMENT OF OVERSIGHT RESPONSE COSTS

58. Payments for Oversight Response Costs.

a. Respondents shall pay EPA all Oversight Response Costs not inconsistent with the NCP. On an annual basis, EPA will send Respondents a bill requiring payment that includes an Unreconciled Cost Accounting Report (SCORPIOS), which includes direct and indirect costs incurred by EPA and its contractors. Also, Respondents shall make all payments within thirty (30) days of receipt of each bill requiring payment, except as otherwise provided in Paragraph 60 of this Settlement Agreement.

b. Respondents shall make all payments required by this Paragraph by Electronic Funds Transfer ("EFT") in accordance with current EFT procedures provided below and shall be accompanied by a statement identifying the name and address of the

party(ies) making payment, the Site name, the EPA Region and Site/Spill ID Number 06JZ, and the EPA docket number for this action to:

Automated Clearinghouse (ACH)
PNC Bank
808 17th Street, NW
Washington, DC 20074
Contact - Jesse White 301-887-6548
ABA = 051036706
Transaction Code 22 - checking
Environmental Protection Agency
Account 310006
CTX Format

c. At the time of payment, Respondents shall send notice that payment has been made to by email to acctsreceivable.cinwd@epa.gov, or to:

EPA Cincinnati Finance Office
26 Martin Luther King Drive
Cincinnati, Ohio 45268

and to:

Chief, Enforcement Assessment Section
U.S. EPA
1445 Ross Avenue (6SF-TE)
Dallas, Texas 75202-2733

d. The total amount to be paid by Respondents pursuant to Paragraph 58(a) shall be deposited by EPA in the Gulfco Marine Maintenance Superfund Site Special Account within the EPA Hazardous Substance Superfund to be retained and used to conduct or finance response actions at or in connection with the Site, or to be transferred by EPA to the EPA Hazardous Substance Superfund.

59. In the event that the payment for Oversight Response Costs is not made within thirty (30) days of Respondents' receipt of a bill, Respondents shall pay Interest on the unpaid balance. The Interest on Oversight Response Costs shall begin to accrue on the date of the bill and shall continue to accrue until the date of payment. Payments of Interest made under this Paragraph shall be in addition to such other remedies or sanctions available to the United States by virtue of Respondents' failure to make timely payments under this Section, including but not limited to, payment of stipulated penalties pursuant to Section XVIII.

60. Respondents may contest payment of any Oversight Response Costs billed under Paragraph 58 if they determine that EPA has made a mathematical error, or if they believe EPA incurred excess costs as a direct result of an EPA action that was

inconsistent with the NCP. Such objection shall be made in writing within thirty (30) days of receipt of the bill and must be sent to the OSC. Any such objection shall specifically identify the contested Oversight Response Costs and the basis for objection. In the event of an objection, Respondents shall within the thirty (30) day period pay all uncontested Oversight Response Costs to EPA in the manner described in Paragraph 58. Simultaneously, Respondents shall establish an interest-bearing escrow account in a federally-insured bank duly chartered in the State of Texas and remit to that escrow account funds equivalent to the amount of the contested Oversight Response Costs. Respondents shall send to the EPA OSC a copy of the transmittal letter and check paying the uncontested Oversight Response Costs, and a copy of the correspondence that establishes and funds the escrow account, including, but not limited to, information containing the identity of the bank and bank account under which the escrow account is established as well as a bank statement showing the initial balance of the escrow account. Simultaneously with establishment of the escrow account, Respondents shall initiate the Dispute Resolution procedures in Section XVI (Dispute Resolution). If EPA prevails in the dispute, within 5 days of the resolution of the dispute, Respondents shall pay the sums due (with accrued interest) to EPA in the manner described in Paragraph 58. If Respondents prevail concerning any aspect of the contested costs, Respondents shall pay that portion of the costs (plus associated accrued interest) for which they did not prevail to EPA in the manner described in Paragraph 58. Respondents shall be disbursed any balance of the escrow account. The dispute resolution procedures set forth in this Paragraph in conjunction with the procedures set forth in Section XVI (Dispute Resolution) shall be the exclusive mechanisms for resolving disputes regarding Respondents' obligation to reimburse EPA for its Oversight Response Costs.

XVI. DISPUTE RESOLUTION

61. Unless otherwise expressly provided for in this Settlement Agreement, the dispute resolution procedures of this Section shall be the exclusive mechanism for resolving disputes arising under this Settlement Agreement. The Parties shall attempt to resolve any disagreements concerning this Settlement Agreement expeditiously and informally.

62. If Respondents object to any EPA action taken pursuant to this Settlement Agreement, with the exception of billings for Oversight Response Costs which are governed by Paragraph 60 where Respondents have within thirty (30) days of receipt of EPA's bill for Oversight Response Costs to notify EPA of their objections to payment, Respondents shall notify EPA in writing of their objection(s) within seven (7) days of such action, unless the objection(s) has/have been resolved informally. EPA and Respondents shall have fourteen (14) days from EPA's receipt of Respondents' written objection(s) to resolve the dispute through formal negotiations (the "Negotiation Period"). The Negotiation Period may be extended at the sole discretion of EPA.

63. Any agreement reached by the parties pursuant to this Section shall be in writing and shall, upon signature by both parties, be incorporated into and become an enforceable part of this Settlement Agreement. If the Parties are unable to reach an agreement within the Negotiation Period, an EPA management official at the branch chief level or higher

will issue a written decision on the dispute to Respondents. EPA's decision shall be incorporated into and become an enforceable part of this Settlement Agreement. Respondents' obligations under this Settlement Agreement shall not be tolled by submission of any objection for dispute resolution under this Section. Following resolution of the dispute, as provided by this Section, Respondents shall fulfill the requirement that was the subject of the dispute in accordance with the agreement reached or with EPA's decision, whichever occurs.

XVII. FORCE MAJEURE

64. Respondents agree to perform all requirements of this Settlement Agreement within the time limits established under this Settlement Agreement, unless the performance is delayed by a *force majeure*. For purposes of this Settlement Agreement, a *force majeure* is defined as any event arising from causes beyond the control of Respondents, or of any entity controlled by Respondents, including but not limited to their contractors and subcontractors, which delays or prevents performance of any obligation under this Settlement Agreement despite Respondents' best efforts to fulfill the obligation. *Force majeure* does not include financial inability to complete the Work, increased cost of performance, or a failure to attain performance standards/action levels set forth in the Action Memorandum.

65. If any event occurs or has occurred that may delay the performance of any obligation under this Settlement Agreement, whether or not caused by a *force majeure* event, Respondents shall notify EPA orally within 3 days of when Respondents first knew that the event might cause a delay. Within 5 days thereafter, Respondents shall provide to EPA in writing an explanation and description of the reasons for the delay; the anticipated duration of the delay; all actions taken or to be taken to prevent or minimize the delay; a schedule for implementation of any measures to be taken to prevent or mitigate the delay or the effect of the delay; Respondents' rationale for attributing such delay to a *force majeure* event if they intend to assert such a claim; and a statement as to whether, in the opinion of Respondents, such event may cause or contribute to an endangerment to public health, welfare or the environment. Failure to comply with the above requirements shall preclude Respondents from asserting any claim of *force majeure* for that event for the period of time of such failure to comply and for any additional delay caused by such failure.

66. If EPA agrees that the delay or anticipated delay is attributable to a *force majeure* event, the time for performance of the obligations under this Settlement Agreement that are affected by the *force majeure* event will be extended by EPA for such time as is necessary to complete those obligations. An extension of the time for performance of the obligations affected by the *force majeure* event shall not, of itself, extend the time for performance of any other obligation. If EPA does not agree that the delay or anticipated delay has been or will be caused by a *force majeure* event, EPA will notify Respondents in writing of its decision. If EPA agrees that the delay is attributable to a *force majeure* event, EPA will notify Respondents in writing of the length of the extension, if any, for performance of the obligations affected by the *force majeure* event.

XVIII. STIPULATED PENALTIES

67. Respondents shall be liable to EPA for stipulated penalties in the amounts set forth in Paragraphs 68 and 69 for failure to comply with the requirements of this Settlement Agreement specified below, unless excused under Section XVII (*Force Majeure*). "Compliance" by Respondents shall include completion of the activities under this Settlement Agreement or any work plan or other plan approved under this Settlement Agreement identified below in accordance with all applicable requirements of law, this Settlement Agreement, the Work Plan, and any plans or other documents approved by EPA pursuant to this Settlement Agreement and within the specified time schedules established by and approved under this Settlement Agreement.

68. Stipulated Penalty Amounts - Work.

a. The following stipulated penalties shall accrue per violation per day for any noncompliance identified in Paragraph 68(b):

Penalty Per Violation Per Day	Period of Noncompliance
$1,000	1st through 14th day
$5,000	15th through 30th day
$10,000	31st day and beyond

b. Compliance Milestones

i. Completion of tank removal field activities;
ii. Draft Removal Report
iii. Final Removal Report

69. Stipulated Penalty Amounts - Reports. The following stipulated penalties shall accrue per violation per day for failure to submit timely or adequate reports or other written documents:

Penalty Per Violation Per Day	Period of Noncompliance
$500	1st through 14th day
$1,000	15th through 30th day
$2,000	31st day and beyond

70. In the event that EPA assumes performance of a portion or all of the Work pursuant to Paragraph 80 of Section XX, Respondents shall be liable for a stipulated penalty in the amount of $25,000.

71. All penalties shall begin to accrue on the day after the complete performance is due or the day a violation occurs, and shall continue to accrue through the final day of the correction of the noncompliance or completion of the activity. However, stipulated penalties shall not accrue: 1) with respect to a deficient submission under Section VIII (Work to be Performed), during the period, if any, beginning on the 31st day after EPA's receipt of

such submission until the date that EPA notifies Respondents of any deficiency; and 2) with respect to a decision by the EPA Management Official at the branch chief level or higher, under Paragraph 63 of Section XVI (Dispute Resolution), during the period, if any, beginning on the 21st day after the Negotiation Period begins until the date that the EPA management official issues a final decision regarding such dispute. Nothing in this Settlement Agreement shall prevent the simultaneous accrual of separate penalties for separate violations of this Settlement Agreement.

72. Following EPA's determination that Respondents have failed to comply with a requirement of this Settlement Agreement, EPA may give Respondents written notification of the failure and describe the noncompliance. EPA may send Respondents a written demand for payment of the penalties. However, penalties shall accrue as provided in the preceding Paragraph regardless of whether EPA has notified Respondents of a violation.

73. All penalties accruing under this Section shall be due and payable to EPA within thirty (30) days of Respondents' receipt from EPA of a demand for payment of the penalties, unless Respondents invoke the dispute resolution procedures under Section XVI (Dispute Resolution). All payments to EPA under this Section shall be paid by certified or cashier's check(s) made payable to "EPA Hazardous Substances Superfund," shall be mailed to U.S. Environmental Protection Agency Superfund Payments, Cincinnati Finance Center, Post Office Box 979076, St. Louis, MO 63197-9000, shall indicate that the payment is for stipulated penalties, and shall reference the EPA Region and Site/Spill ID Number 06JZ, the EPA Docket Number 06-13-10, and the name and address of the party(ies) making payment. Copies of check(s) paid pursuant to this Section, and any accompanying transmittal letter(s), shall be sent to EPA as provided in Paragraph 58c.

74. The payment of penalties shall not alter in any way Respondents' obligation to complete performance of the Work required under this Settlement Agreement.

75. Penalties shall continue to accrue during any dispute resolution period, but need not be paid until 15 days after the dispute is resolved by agreement or by receipt of EPA's decision.

76. If Respondents fail to pay stipulated penalties when due, EPA may institute proceedings to collect the penalties, as well as Interest. Respondents shall pay Interest on the unpaid balance, which shall begin to accrue on the date of demand made pursuant to Paragraph 72. Nothing in this Settlement Agreement shall be construed as prohibiting, altering, or in any way limiting the ability of EPA to seek any other remedies or sanctions available by virtue of Respondents' violation of this Settlement Agreement or of the statutes and regulations upon which it is based, including, but not limited to, penalties pursuant to Sections 106(b) and 122(*l*) of CERCLA, 42 U.S.C. §§ 9606(b) and 9622(*l*), and punitive damages pursuant to Section 107(c)(3) of CERCLA, 42 U.S.C. § 9607(c)(3). Provided, however, that EPA shall not seek civil penalties pursuant to Section 106(b) or 122(*l*) of CERCLA or punitive damages pursuant to Section 107(c)(3) of CERCLA for any violation for which a stipulated penalty is provided in this Section, except in the case of a

willful violation of this Settlement Agreement in the event that EPA assumes performance of a portion or all of the Work pursuant to Section XX, Paragraph 80. Notwithstanding any other provision of this Section, EPA may, in its unreviewable discretion, waive any portion of stipulated penalties that have accrued pursuant to this Settlement Agreement.

XIX. COVENANT NOT TO SUE BY EPA

77. In consideration of the actions that will be performed and the payments that will be made by Respondents under the terms of this Settlement Agreement, and except as otherwise specifically provided in this Settlement Agreement, EPA covenants not to sue or to take administrative action against Respondents pursuant to Sections 106 and 107(a) of CERCLA, 42 U.S.C. §§ 9606 and 9607(a), for the Work and Oversight Response Costs. This covenant not to sue shall take effect upon the Effective Date of this Settlement Agreement. This covenant not to sue is conditioned upon the complete and satisfactory performance by Respondents of their obligations under this Settlement Agreement, including, but not limited to, payment of Oversight Response Costs pursuant to Section XV. This covenant not to sue extends only to Respondents and does not extend to any other person.

XX. RESERVATIONS OF RIGHTS BY EPA

78. Except as specifically provided in this Settlement Agreement, nothing in this Settlement Agreement shall limit the power and authority of EPA or the United States to take, direct, or order all actions necessary to protect public health, welfare, or the environment or to prevent, abate, or minimize an actual or threatened release of hazardous substances, pollutants or contaminants, or hazardous or solid waste on, at, or from the Site. Further, nothing in this Settlement Agreement shall prevent EPA from seeking legal or equitable relief to enforce the terms of this Settlement Agreement, from taking other legal or equitable action as it deems appropriate and necessary, or from requiring Respondents in the future to perform additional activities pursuant to CERCLA or any other applicable law.

79. The covenant not to sue set forth in Section XIX above does not pertain to any matters other than those expressly identified therein. EPA reserves, and this Settlement Agreement is without prejudice to, all rights against Respondents with respect to all other matters, including, but not limited to:

a. claims based on a failure by Respondents to meet a requirement of this Settlement Agreement;

b. liability for costs not included within the definition of Oversight Response Costs;

c. liability for performance of response action other than the Work;

d. criminal liability;

e. liability for damages for injury to, destruction of, or loss of natural resources, and for the costs of any natural resource damage assessments;

f. liability arising from the past, present, or future disposal, release or threat of release of Waste Materials outside of the Site; and

g. liability for costs incurred or to be incurred by the Agency for Toxic Substances and Disease Registry related to the Site.

80. Work Takeover. In the event EPA determines that Respondents have ceased implementation of any portion of the Work, are seriously or repeatedly deficient or late in their performance of the Work, or are implementing the Work in a manner which may cause an endangerment to human health or the environment, EPA may assume the performance of all or any portion of the Work as EPA determines necessary. Respondents may invoke the procedures set forth in Section XVI (Dispute Resolution) to dispute EPA's determination that takeover of the Work is warranted under this Paragraph. Costs incurred by the United States in performing the Work pursuant to this Paragraph shall be considered Oversight Response Costs that Respondents shall pay pursuant to Section XV (Payment of Oversight Response Costs). Notwithstanding any other provision of this Settlement Agreement, EPA retains all authority and reserves all rights to take any and all response actions authorized by law.

XXI. COVENANT NOT TO SUE BY RESPONDENTS

81. Respondents covenant not to sue and agree not to assert any claims or causes of action against the United States, or its contractors or employees, with respect to the Work, Oversight Response Costs, or this Settlement Agreement, including, but not limited to:

a. any direct or indirect claim for reimbursement from the Hazardous Substance Superfund established by 26 U.S.C. § 9507, based on Sections 106(b)(2), 107, 111, 112, or 113 of CERCLA, 42 U.S.C. §§ 9606(b)(2), 9607, 9611, 9612, or 9613, or any other provision of law;

b. any claim arising out of response actions at or in connection with the Site, including any claim under the United States Constitution, the State Constitution, the Tucker Act, 28 U.S.C. § 1491, the Equal Access to Justice Act, 28 U.S.C. § 2412, as amended, or at common law; or

c. any claim against the United States pursuant to Sections 107 and 113 of CERCLA, 42 U.S.C. §§ 9607 and 9613, relating to the Work or Oversight Response Costs.

82. Nothing in this Agreement shall be deemed to constitute approval or preauthorization of a claim within the meaning of Section 111 of CERCLA, 42 U.S.C. § 9611, or 40 C.F.R. § 300.700(d).

83. Respondents agree not to seek judicial review of the final rule listing the Site on the NPL based on a claim that changed site conditions that resulted from the performance of the Work in any way affected the basis for listing the Site.

XXII. OTHER CLAIMS

84. By issuance of this Settlement Agreement, the United States and EPA assume no liability for injuries or damages to persons or property resulting from any acts or omissions of Respondents. The United States or EPA shall not be deemed a party to any contract entered into by Respondents or their directors, officers, employees, agents, successors, representatives, assigns, contractors, or consultants in carrying out actions pursuant to this Settlement Agreement.

85. Except as expressly provided in Section XIX (Covenant Not to Sue by EPA), nothing in this Settlement Agreement constitutes a satisfaction of or release from any claim or cause of action against Respondents or any person not a party to this Settlement Agreement, for any liability such person may have under CERCLA, other statutes, or common law, including but not limited to any claims of the United States for costs, damages and interest under Sections 106 and 107 of CERCLA, 42 U.S.C. §§ 9606 and 9607.

86. No action or decision by EPA pursuant to this Settlement Agreement shall give rise to any right to judicial review, except as set forth in Section 113(h) of CERCLA, 42 U.S.C. §9613(h).

XXIII. CONTRIBUTION

87. a. The Parties agree that this Settlement Agreement constitutes an administrative settlement for purposes of Section 113(f)(2) of CERCLA, 42 U.S.C. § 9613(f)(2), and that Respondents are entitled, as of the Effective Date, to protection from contribution actions or claims as provided by Sections 113(f)(2) and 122(h)(4) of CERCLA, 42 U.S.C. §§ 9613(f)(2) and 9622(h)(4), for "matters addressed" in this Settlement Agreement. The "matters addressed" in this Settlement Agreement are the Work and Oversight Response Costs.

b. The Parties agree that this Settlement Agreement constitutes an administrative settlement for purposes of Section 113(f)(3)(B) of CERCLA, 42 U.S.C. § 9613(f)(3)(B), pursuant to which Respondents have, as of the Effective Date, resolved their liability to the United States for the Work and Oversight Response Costs.

c. Nothing in this Settlement Agreement precludes the United States or Respondents from asserting any claims, causes of action, or demands for indemnification, contribution, or cost recovery against any persons not parties to this Settlement Agreement. Nothing in this Settlement Agreement diminishes the right of the United States, pursuant to Section 113(f)(2) and (3) of CERCLA, 42 U.S.C. § 9613(f)(2)-(3), to pursue any such persons to obtain additional response costs or response action and to enter into settlements that give rise to contribution protection pursuant to Section 113(f)(2).

XXIV. INDEMNIFICATION

88. Respondents shall indemnify, save and hold harmless the United States, its officials, agents, contractors, subcontractors, employees and representatives from any and all claims or causes of action arising from, or on account of, negligent or other wrongful acts or omissions of Respondents, their officers, directors, employees, agents, contractors, or subcontractors, in carrying out actions pursuant to this Settlement Agreement. In addition, Respondents agree to pay the United States all costs incurred by the United States, including but not limited to attorneys fees and other expenses of litigation and settlement, arising from or on account of claims made against the United States based on negligent or other wrongful acts or omissions of Respondents, their officers, directors, employees, agents, contractors, subcontractors and any persons acting on their behalf or under their control, in carrying out activities pursuant to this Settlement Agreement. The United States shall not be held out as a party to any contract entered into by or on behalf of Respondents in carrying out activities pursuant to this Settlement Agreement. Neither Respondents nor any such contractor shall be considered an agent of the United States.

89. The United States shall give Respondents notice of any claim for which the United States plans to seek indemnification pursuant to this Section and shall consult with Respondents prior to settling such claim.

90. Respondents waive all claims against the United States for damages or reimbursement or for set-off of any payments made or to be made to the United States, arising from or on account of any contract, agreement, or arrangement between any one or more of Respondents and any person for performance of Work on or relating to the Site, including, but not limited to, claims on account of construction delays. In addition, Respondents shall indemnify and hold harmless the United States with respect to any and all claims for damages or reimbursement arising from or on account of any contract, agreement, or arrangement between any one or more of Respondents and any person for performance of Work on or relating to the Site, including, but not limited to, claims on account of construction delays.

XXV. INSURANCE

91. At least seven (7) days prior to commencing any on-site Work under this Settlement Agreement, Respondents or their contractors or primary subcontractors that are actually conducting the Work on the Site shall secure, and shall maintain for the duration of their on-site Work, comprehensive general liability insurance of $1,000,000 per occurrence and automobile insurance with limits of $1,000,000, combined single limit, naming the EPA as an additional insured. Within the same period, Respondents shall provide EPA with the certificates of such insurance and copies of such insurance policies that pertain to the Work at the Site and have been redacted to remove confidential information. Upon EPA's request, Respondents shall submit such certificates of insurance and copies of policies as described above for each such contractor or primary subcontractor each year on the anniversary of the Effective Date if the same contractor or primary subcontractor is still conducting on-site Work.

XXVI. FINANCIAL ASSURANCE

92. Within (thirty) 30 days of the Effective Date, Respondents shall establish and maintain financial security for the benefit of EPA in the amount of $570,000 in one or more of the following forms, in order to secure the full and final completion of Work by Respondents:

a. a surety bond unconditionally guaranteeing payment and/or performance of the Work;

b. one or more irrevocable letters of credit, payable to or at the direction of EPA, issued by financial institution(s) acceptable in all respects to EPA;

c. a trust fund administered by a trustee acceptable in all respects to EPA;

d. a policy of insurance issued by an insurance carrier acceptable in all respects to EPA, which ensures the payment and/or performance of the Work;

e. a written guarantee to pay for or perform the Work provided by one or more parent companies of Respondents, or by one or more unrelated companies that have a substantial business relationship with at least one of Respondents; including a demonstration that any such guarantor company satisfies the financial test requirements of 40 C.F.R. Part 264.143(f); and/or

f. a demonstration of sufficient financial resources to pay for the Work made by one or more of Respondents, which shall consist of a demonstration that any such Respondent satisfies the requirements of 40 C.F.R. Part 264.143(f).

93. Any and all financial assurance instruments provided pursuant to this Section shall be in form and substance satisfactory to EPA, determined in EPA's sole discretion. In the event that EPA determines at any time that the financial assurances provided pursuant to this Section (including, without limitation, the instrument(s) evidencing such assurances) are inadequate, Respondents shall, within thirty (30) days of receipt of notice of EPA's determination, obtain and present to EPA for approval one of the other forms of financial assurance listed in Paragraph 92, above. In addition, if at any time EPA notifies Respondents that the anticipated cost of completing the Work has increased, then, within thirty (30) days of such notification, Respondents shall obtain and present to EPA for approval a revised form of financial assurance (otherwise acceptable under this Section) that reflects such cost increase. Respondents' inability to demonstrate financial ability to complete the Work shall in no way excuse performance of any activities required under this Settlement Agreement.

94. If Respondents seek to ensure completion of the Work through a guarantee pursuant to Subparagraph 92(e) or 92(f) of this Settlement Agreement, Respondents shall (i) demonstrate to EPA's satisfaction that the guarantor satisfies the requirements of 40 C.F.R. Part 264.143(f); and (ii) resubmit sworn statements conveying the information required by 40 C.F.R. Part 264.143(f) annually, on the anniversary of the Effective Date

or such other date as agreed by EPA, to EPA. For the purposes of this Settlement Agreement, wherever 40 C.F.R. Part 264.143(f) references "sum of current closure and post-closure costs estimates and the current plugging and abandonment costs estimates," the dollar amount to be used in the relevant financial test calculations shall be the current cost estimate of $570,000 for the Work at the Site plus any other RCRA, CERCLA, TSCA, or other federal environmental obligations financially assured by the relevant Respondent or guarantor to EPA by means of passing a financial test.

95. Financial assurance required by this Administrative Order on Consent can be combined and submitted in conjunction with the financial assurance submitted pursuant to the UAO for RI/FS as long as the financial assurance for the removal work as described in this AOC is submitted within thirty (30) days of the Effective Date of this Settlement Agreement.

96. If, after the Effective Date, Respondents can show that the estimated cost to complete the remaining Work has diminished below the amount set forth in Paragraph 92 of this Section, Respondents may, on any anniversary date of the Effective Date, or at any other time agreed to by the Parties, reduce the amount of the financial security provided under this Section to the estimated cost of the remaining Work to be performed. Respondents shall submit a proposal for such reduction to EPA, in accordance with the requirements of this Section, and may reduce the amount of the security after receiving written approval from EPA. In the event of a dispute, Respondents may seek dispute resolution pursuant to Section XVI (Dispute Resolution). Respondents may reduce the amount of security in accordance with EPA's written decision resolving the dispute.

97. Respondents may change the form of financial assurance provided under this Section at any time, upon notice to and prior written approval by EPA, provided that EPA determines that the new form of assurance meets the requirements of this Section. In the event of a dispute, Respondents may change the form of the financial assurance only in accordance with the written decision resolving the dispute.

XXVII. MODIFICATIONS

98. The OSC may make modifications to any plan or schedule or Work Plan in writing or by oral direction. Any oral modification will be memorialized in writing by EPA promptly, but shall have as its effective date the date of the OSC's oral direction. Any other requirements of this Settlement Agreement may be modified in writing by mutual agreement of the parties.

99. If Respondents seek permission to deviate from any approved work plan or schedule or Work Plan, Respondents' Project Coordinator shall submit a written request to EPA for approval outlining the proposed modification and its basis. Respondents may not proceed with the requested deviation until receiving oral or written approval from the OSC pursuant to Paragraph 98.

100. No informal advice, guidance, suggestion, or comment by the OSC or other EPA representatives regarding reports, plans, specifications, schedules, or any other writing submitted by Respondents shall relieve Respondents of their obligation to obtain any formal approval required by this Settlement Agreement, or to comply with all requirements of this Settlement Agreement, unless it is formally modified.

XXVIII. NOTICE OF COMPLETION OF WORK

101. When EPA determines, after EPA's review of the Final Report, that all Work has been fully performed in accordance with this Settlement Agreement, with the exception of any continuing obligations required by this Settlement Agreement, including post-removal site controls, payment of Oversight Response Costs, or record retention, EPA will provide written notice to Respondents. If EPA determines that any such Work has not been completed in accordance with this Settlement Agreement, EPA will notify Respondents, provide a list of the deficiencies, and require that Respondents modify the Work Plan if appropriate in order to correct such deficiencies. Respondents shall implement the modified and approved Work Plan and shall submit a modified Final Report in accordance with the EPA notice. Failure by Respondents to implement the approved modified Work Plan shall be a violation of this Settlement Agreement.

XXIX. INTEGRATION/APPENDICES

102. This Settlement Agreement and its appendices constitute the final, complete and exclusive agreement and understanding among the Parties with respect to the settlement embodied in this Settlement Agreement. The parties acknowledge that there are no representations, agreements or understandings relating to the settlement other than those expressly contained in this Settlement Agreement. The following appendices are attached to and incorporated into this Settlement Agreement:

a. Appendix A is the Action Memorandum;

b. Appendix B is the List of Respondents;

c. Appendix C is the Site Map;

d. Appendix D is the Work Plan.

XXX. EFFECTIVE DATE

103. This Settlement Agreement shall be effective three (3) days after the Settlement Agreement is signed by the Regional Administrator or his/her delegatee.

It is so ORDERED and Agreed this 26 day of Oct, 2010.

By: _____ Date: 26 Oct 2010

Samuel Coleman, P.E.
Director
Superfund Division
Region 6
U.S. Environmental Protection Agency

EFFECTIVE DATE: 29 Oct 2010

The undersigned representatives of Respondents certify that they are fully authorized to enter into the terms and conditions of this Settlement Agreement and to bind the parties they represent to this document.

Agreed this 12th day of October, 2010.

For Respondent: Chromalloy American Corporation

By: _____

Title: Attorney in Fact

The undersigned representatives of Respondents certify that they are fully authorized to enter into the terms and conditions of this Settlement Agreement and to bind the parties they represent to this document.

Agreed this 13 day of October, 2010.

For Respondent: The Dow Chemical Company

By: _____
Steven C. Lucas

Title: Sr. Remediation Leader

The undersigned representatives of Respondents certify that they are fully authorized to enter into the terms and conditions of this Settlement Agreement and to bind the parties they represent to this document.

Agreed this 20th day of October, 2010.

For Respondent: LDL Coastal Limited, L.P.

By: _____, Manager

Title: of RAMWAY Management, L.L.C. the General Partner of LDL Coastal Limited, L.P.

APPENDIX A
ACTION MEMORANDUM

Administrative Order on Consent for Removal Action
Gulfco Marine Maintenance Superfund Site
U.S. EPA Region VI
CERCLA Docket No. 06-13-10

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS TX 75202-2733

SEP 13 2010

MEMORANDUM

SUBJECT: Request for a Time Critical Removal Action at the Gulfco Marine Maintenance Site, Brazoria County, Texas

FROM: Rita Engblom, Federal On-Scene Coordinator
Superfund Removal Team (6SF-PR)

TO: Samuel Coleman, P.E., Director
Superfund Division (6SF)

THRU: for Mark Hansen, Acting Associate Director
Prevention and Response Branch (6SF-P)

I. PURPOSE

This Memorandum requests approval of a Time Critical removal action in accordance with the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), 42 U.S.C. § 9604, at the Gulfco Marine Maintenance site (the "Site") located approximately three miles northeast of Freeport, in Brazoria County, Texas. The site consists of approximately 40 acres along the north bank of the Intracoastal Waterway. The time critical removal action is to address source material in deteriorating above ground storage tanks.

This action meets the criteria for initiating a removal action under Section 300.415 of the National Contingency Plan (NCP), 40 CFR § 300.415. This action is expected to require less than twelve months and $2 million to complete.

II. SITE CONDITIONS AND BACKGROUND

CERCLIS ID#:	TXD055144539
Category of Removal:	Time-Critical
Site ID#:	06JZ
Latitude:	28.96684
Longitude:	-95.28965

A. Site Description

1. Removal Site Evaluation

The Gulfco Marine Maintenance facility operated as a barge cleaning and repair facility from 1971 through 1999 under several owners. Operations at the facility involved the cleaning, servicing and repair of various types of barges. Chemicals were drained and pumped from barges into Aboveground Storage Tanks (ASTs). Barges were then washed with water and/or a detergent solution. Generated wash waters were disposed of in barges and/or ASTs onsite.

Previous investigations at the Site have included:

- Phase I and II Investigations (1998 - 1999) – Phase I and II investigations conducted by the Potentially Responsible Parties (PRPs).

- LTE Site Characterization (1999) – In March 1999, the PRPs conducted an investigation of the Site, including the sampling of ASTs and drum contents, accumulated water within the former AST tank farm containment area, soils, residual sandblasting material, sediment from the fresh water pond, and groundwater.

- Screening Site Inspection (2000) – In cooperation with the Environmental Protection Agency (EPA), the Texas Commission on Environmental Quality (TCEQ), formerly the Texas Natural Resources and Conservation Commission (TNRCC) performed a Screening Site Inspection (SSI). The SSI included collection of onsite and offsite soil samples, Intracoastal Waterway sediment samples (adjacent to and distant from the Site), pond sediment samples and groundwater samples from existing monitoring wells.

- Expanded Site Inspection 2001 – In cooperation with EPA, TCEQ performed an Expanded Site Inspection (ESI) in January 2001. The ESI included collection of groundwater samples from temporary onsite and offsite monitoring wells.

- Gulfco Marine Maintenance, Inc., the Potentially Responsible Party (PRP) gauged and sampled ASTs in 2006 - In accordance with an Administrative Settlement Agreement and Order on Consent for Removal Action (AOC) with the EPA, the RP gauged fluid levels and collected samples from ASTs for analysis. AST contents included water, various organic phases, oily sludges, and sand, rust solids, and debris. Analytical results from some ASTs indicated the presence of the following hazardous substances: chloroform, 1,1-dichloroethane, 1,2-dichloroethane, methylene chloride, tetrachloroethylene (PCE), 1,1,1-trichloroethane, 1,2,4-trimethylbenzene and trichloroethylene (TCE). Samples failed Total Characteristic Leaching Procedure (TCLP) for chloroform, benzene, 1,2-dichloroethane, PCE, TCE, and vinyl chloride.

Thirteen Potential Source Areas (PSAs) have been identified at the Site based on the history of the Site and previous investigations. Chemicals of Concern (COCs) include metals, Volatile Organic Compounds (VOCs), Semi-Volatile Organic Compounds (SVOCs), pesticides, and

polychlorinated biphenyls (PCBs).

On March 9, 2010, an EPA inspection identified time critical conditions at the Site. One of the fifteen tanks previously documented at the Site had been washed away by Hurricane Ike. Corrosion on some of the remaining tanks was resulting in complete penetration of the metal. Contents of some of these tanks have previously been documented as hazardous substances, including benzene, 1,2 dichloroethane, chloroform, heptachlor, tetrachloroethene, trichloroethene, and vinyl chloride.

2. Physical Location

The facility is located at 906 Marlin Avenue (also referred to as County Road 756) approximately three miles northeast of the city of Freeport, in Brazoria County, Texas (*See* Attachment 1). The Site is within the 100-year coastal flood plain along the north bank of the Intercoastal Waterway between Oyster Creek to the east and the Old Brazos River Channel and the Dow Barge Canal to the west. North of Marlin Avenue, drainage from the Site flows to the northeast into adjacent wetlands and Oyster Creek. The southern part of the Site drains to the south and enters the Intercoastal Waterway.

Approximately 78 people live within the one square mile area surrounding the Site. Approximately 3,392 people live within 50 square miles of the Site. The surrounding area is primarily industrial and commercial. A residential area is located approximately 300 feet west of the Site.

3. Site Characteristics

The Site is approximately 40 acres in size. The Gulfco Marine Maintenance, Inc. facility operated as a barge cleaning and repair facility from 1971 to 1999. As part of this operation, product heels were recovered from the barges and the barges were cleaned of waste oils, caustics and organic chemicals. Product and waste from the barge cleaning were stored in three surface impoundments and ASTs. An AST farm is located in the southern portion of the Site.

Marlin Avenue divides the Site into two primary areas (*See* Attachment 2). The property to the north of Marlin Avenue (the North Area) includes the closed surface impoundments. An AST farm is located at the Site south of Marlin Avenue. It consists of fourteen tanks of various sizes located within a concrete bermed area. The tanks contain water, various organic phases, oily sludges, and sand, rust solids, and debris. Sampling of AST contents has indentified various hazardous substances including benzene, 1,2-dichloroethane, chloroform, heptachlor, tetrachloroethene, trichloroethene, and vinyl chloride.

4. Release or Threatened Release into the Environment of a Hazardous Substance, or Pollutant or Contaminant

Tanks contain hazardous substances including: benzene; chloroform; 1,2 dichloroethane; trichloroethylene; tetrachloroethylene; and vinyl chloride in various concentrations. These are

listed as hazardous substances pursuant to 40 CFR § 302.4. As such, they are hazardous substances as defined in Section 101(14) of the CERCLA, 42 U.S.C. § 9601(14).

5. NPL Status

The Gulfco Marine Site was proposed for placement on the National Priorities List (NPL) on September 5, 2002 and subsequently placed on the NPL on April 30, 2003.

6. Maps, pictures and other graphic representations

Attachment 1 Site Location Map
Attachment 2 Site Sketch
Attachment 3 ATSDR Fact Sheets
Attachment 4 Drainage Pathway
Attachment 5 Enforcement Addendum (Confidential EPA file)

B. Other Actions to Date

1. Previous Actions

The TCEQ in cooperation with the EPA conducted a Screening Site Inspection (2000) and an Expanded Site Inspection 2001. A Hazard Ranking Score (HRS) Documentation Record was prepared in 2002 for NPL listing of the Site.

2. Current Actions

A PRP is performing a Remedial Investigation/Feasibility Study (RI/FS) required by the Unilateral Administrative Order issued by the EPA. Once complete, the EPA will propose a final remedy to be published in a Record of Decision to address remaining PSAs at the Site.

C. State and Local Authorities' Roles

1. State and Local Actions to Date

The TCEQ provides support to the EPA in development of the RI/FS.

2. Potential for State/local Response

The TCEQ will provide assistance in oversight of this removal action.

III. THREATS TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES

A. Threats to Public Health or Welfare

Section 300.415 of the NCP lists the factors to be considered in determining the appropriateness of a removal action. Paragraphs (b)(2)(i), (ii), (iii), and (iv) directly apply to the conditions at the Site. Any one of these factors may be sufficient to justify a removal action.

1. Exposure to Human Populations, Animals or the Food Chain, NCP Section 300.415.(b)(2)(i)

A number of CERCLA hazardous substances have been documented at the Site, at levels which fail TCLP, including benzene, chloroform and chlorinated hydrocarbons.

The predominant threat to human populations is the potential for exposure by direct contact with hazardous waste at the Site, including but not limited to benzene; chloroform; 1,2 dichloroethane; trichloroethylene; tetrachloroethylene; and vinyl chloride.

Potentially, a wide array of adverse human health effects could occur through the inhalation, ingestion, or dermal contact with chemicals onsite. Effects include minor to severe irritation of skin, mucous membrane, lung, and gastrointestinal tract; neurological effects; death from systemic effects and asphyxiation; blood effects; and cancer. Potential effects of some of the more toxic chemicals which are hazardous substances as defined at Section 101(14) of CERCLA, 42 U.S.C. § 9601(14), and further defined at 40 CFR § 302.4, are summarized below:

a. Benzene – Benzene is a carcinogen. Systemic effects from exposure include irritation to mucous membranes, restlessness, convulsions, and depression.
b. Chloroform – Chloroform can cause dizziness, fatigue, and headache. Inhalation or ingestion of high levels of chloroform over time may damage liver and kidneys.
c. Trichloroethylene (TCE) - Breathing large amounts of trichloroethylene may cause impaired heart function, unconsciousness, and death. Breathing it for long periods may cause nerve, kidney, and liver damage.
d. Tetrachloroethylene (perchloroethylene) – PCE may be a carcinogen. High concentrations can cause dizziness, headache, sleepiness, confusion, nausea, difficulty in speaking and walking, unconsciousness, and death.
e. Vinyl chloride – Vinyl chloride is a carcinogen. Breathing high levels of vinyl chloride can cause you to feel dizzy or sleepy. Breathing very high levels can cause you to pass out, and breathing extremely high levels can cause death.

2. Contamination of Drinking Water Supplies or Sensitive Ecosystems, NCP Section 300.415(b)(2)(ii)

North of Marlin Avenue, drainage from the Site flows to the northeast into adjacent wetlands and Oyster Creek. The southern part of the Site drains to the south and enters the Intercoastal

Waterway. The Site is within the 100-year coastal flood plain along the north bank of the Intercoastal Waterway between Oyster Creek to the east and the Old Brazos River Channel and the Dow Barge Canal to the west. Sensitive ecosystems, including wetlands receiving drainage from the Site could be impacted by the toxic contaminants identified onsite.

3 Hazardous Substances or Pollutants or Contaminants in Drums, Barrels, Tanks, or Other Bulk Storage Containers, That May Pose a Threat of Release, Section 300.415 (b) (2) (iii)

A tank farm located in the Southern portion of the Site contains ASTs holding liquid and sludge/sediment waste. The ASTs contain water, various organic phases, oily sludges, and sand, rust solids, and debris. Lab analysis identified the following hazardous substances: benzene; chloroform; 1,2 dichloroethane; trichloroethylene; tetrachloroethylene; and vinyl chloride.

4. Weather Conditions That May Cause the Release or Migration of Hazardous Substances, NCP Section 300.415(b)(2)(v)

The area receives an average of 51 inches of rain annually. The contaminants are subject to migration by entrainment, windblown deposition and surface runoff. Located on the coast of Texas, the Site is subject to tropical depressions and hurricanes. In 2008, the Site received heavy rain and winds from Hurricane Ike.

B. Threats to the Environment

Areas of the Site north of Marlin Avenue drain to the northeast into emergent, estuarine, persistent, irregularly flooded wetlands. These wetlands are directly adjacent to the upland area of the surface impoundments on the north, east, and west. The overland segment distance from the surface impoundment to wetlands contiguous to Oyster Creek is less than 10 feet. These wetlands extend approximately 0.48 miles to Oyster Creek (*See* Attachment 4).

According to the USFWS, Threatened and Endangered Species for Brazoria County include: bald eagle, brown pelican, green sea turtle, hawksbill sea turtle, Kemp's ridley sea turtle, leatherback sea turtle, loggerhead sea turtle, piping plover, and whooping crane.

IV. ENDANGERMENT DETERMINATION

Actual or threatened releases of hazardous substances from this Site, if not addressed by implementing the response action selected in this Action Memorandum, may present an imminent and substantial endangerment to public health, or welfare, or the environment.

V. PROPOSED ACTIONS AND ESTIMATED COSTS

A. Proposed Actions

1. Proposed Action Description

The following actions are proposed to address the present and future threats of hazardous substances from ASTs onsite:

- Prior to sampling or content removal, each AST will be gauged to verify the approximate content volume. For gauging and sampling purposes, the tanks will be accessed utilizing ladders and/or man lifts.
- Samples will be collected using dippers, sampling thieves and/or other sampling devices as appropriate depending on tank size, content type (solid or liquid) and content volume in order to obtain a representative sample. One representative sample will be collected from each tank waste stream. Containment area water and sludge samples will be collected directly from the containment areas using dippers, bailers, and/or other appropriate devices.
- The analytical suite for AST and accumulated sludge samples (if any) will be determined based on the requirements of the removal action contractor and/or the offsite waste management facility. Analytical data will be used to profile specific waste streams for disposal. All analytical data collected for this removal action shall be provided electronically to EPA.
- Remove and properly dispose of hazardous tank liquids and solids. Vacuum trucks, pumps, or similar equipment may be used to transfer contents as necessary.
- Water containing hazardous substances may be separated from oil/sludge phase, screened, and filtered.
- Decanted water from ASTs will be tested for COCs and compared to wastewater standards. If wastewater quality standards can be met, the effluent may be discharged in accordance with TCEQ permit requirements. If effluent does not meet wastewater quality standards, the water will be sent for offsite disposal.

All offsite transportation and disposal will be done in accordance with applicable U.S. Department of Transportation (USDOT) requirements and in compliance with the EPA's Offsite Rule. All requirements under the Occupational Safety and Health Act (OSHA) of 1970, 29 U.S.C. § 651 et seq., and under the laws of the State, approved under Section 18 of the Federal OSHA laws, as well as other applicable safety and health requirements, will be followed. Federal OSHA requirements include Hazardous Materials Operation, 20 CFR § 1910, as amended by 54 Fed. Reg. 9317 (March, 1989), all OSHA General Industry (29 CFR § 1910) and Construction (29 CFR § 1926) standards wherever they are applicable, as well as OSHA record keeping and reporting regulations, and the EPA regulations set forth in 40 CFR § 300, relating to the conduct of work at Superfund sites.

Other requirements under the OSHA of 1970, 29 U.S.C. § 651 et seq., and under the laws of a State with an approved equivalent worker safety program, as well as other applicable safety and health requirements, will be followed. Federal OSHA requirements include, among other things, Hazardous Materials Operation, 20 CFR § 1910, as amended by 54 Fed. Reg. 9317 (March 1989), all OSHA General Industry (29 CFR § 1910) and Construction (29 CFR § 1926) standards wherever they are relevant, as well as OSHA record keeping and reporting regulations, and the EPA regulations set forth in 40 CFR § 300 relating to the conduct of work at Superfund sites.

2. Contribution to Remedial Performance

Because this action constitutes source control, these actions are cost effective and consistent with long term remediation strategies that may be developed for the Site.

3. Description of Alternative Technologies

The proposed action includes removal and offsite disposal of the chemical wastes that pose the highest risk to public health. No alternatives technologies can be applied to these portions of the cleanup.

4. Applicable or Relevant and Appropriate Requirements (ARARs)

This removal action will be conducted to abate the actual or potential release of a hazardous substance, pollutant, or contaminant to the environment, in accordance with CERCLA, 42 U.S.C. § 9601 et seq., and in a manner consistent with the National Contingency Plan, 40 CFR § 300, as required at 33 U.S.C. § 1321(c)(3) and 42 U.S.C. § 9604 (a)(1). As stated at 40 CFR § 300.415(j), fund-financed removal actions under CERCLA Section 104 and removal actions under CERCLA Section 106 shall, to the extent practicable considering the exigencies of the situation, attain the ARARs under Federal environmental law.

The Resource Conservation and Recovery Act (RCRA) waste analysis requirements found at 40 CFR § 261.20 and 261.30, RCRA's manifesting requirements found at 40 CFR § 262.20, and RCRA packaging and labeling requirements found at 40 CFR § 262.30 are ARARs for this removal action. Because onsite storage of hazardous wastes will not exceed ninety days, specific storage requirements found at 40 CFR § 265 are not ARARs (*See* 40 CFR § 262.34).

5. Project Schedule

After the Action Memorandum is signed, it is anticipated that the cleanup action will commence within 30 days. Total project length will be approximately 90 days.

B. Estimated Costs

This action is expected to be performed by the RP at an estimated cost of $540,000. The estimated cost of oversight of this action is approximately $30,000.

ESTIMATED COSTS

Extramural Costs	
ERRS	$ N/A
START	$ 15,000
Intramural Costs	
EPA Regional Direct Costs	$ 13,000
EPA Regional Indirect Costs	$ 2,000
TOTAL, CERCLA REMOVAL PROJECT CEILING.....	**$ 30,000**

VI. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

The proposed actions for the Gulfco Marine Maintenance site should be taken immediately. Should these actions be delayed, the potential threats to human health and the environment will increase.

VII. OUTSTANDING POLICY ISSUES

None.

VIII. ENFORCEMENT

See attached confidential Enforcement Attachment (*See* Attachment 5).

IX. RECOMMENDATION

This decision document represents the selected removal action for the Gulfco Marine Maintenance site in Brazoria County, Texas, developed in accordance with CERCLA, 42 U.S.C.§ 9601 et seq., and consistent with the NCP, 40 CFR § 300. This decision is based on the administrative record for the Site.

Conditions at the Site meet the NCP section 300.415(b)(2) criteria for a removal and I recommend your approval of the proposed removal action. The total project ceiling, if approved, will be $30,000.00. None of this funding will come from the Regional removal allowance.

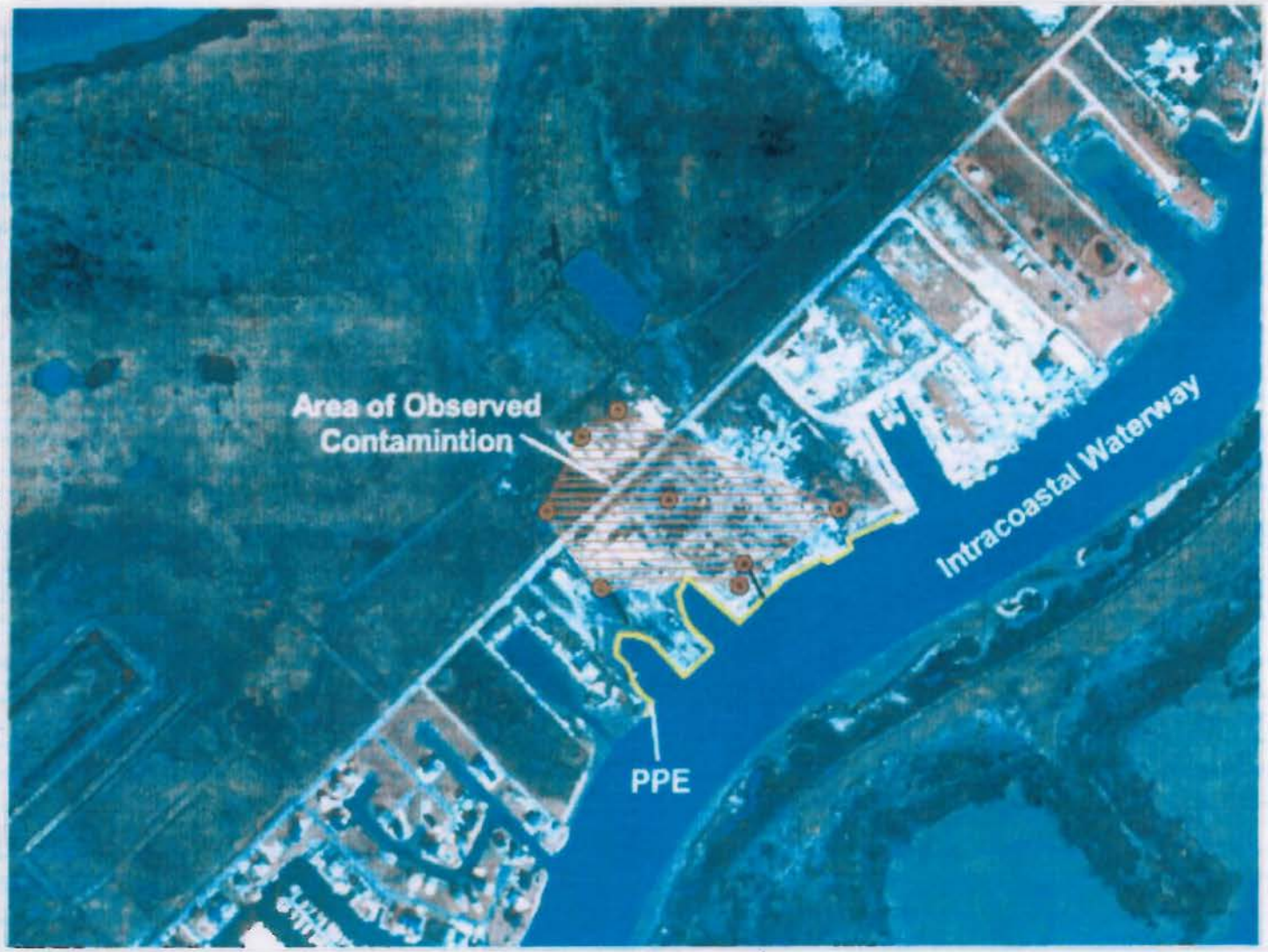
Approved: Pamela Phillips Acting Date: 9/13/10

Samuel Coleman, P.E., Director
Superfund Division

Attachments

ATTACHMENT 1

Site Location Map



TNRCC *Protecting Texas by Reducing and Preventing Pollution*

Gulfco Marine Maintenance TXD #055144539

N

0.3 0 0.3 0.6 Miles

Legend

Area of Observed Contamination associated with Source No. 1

Drainage Pathway from Area of Observed Contamination

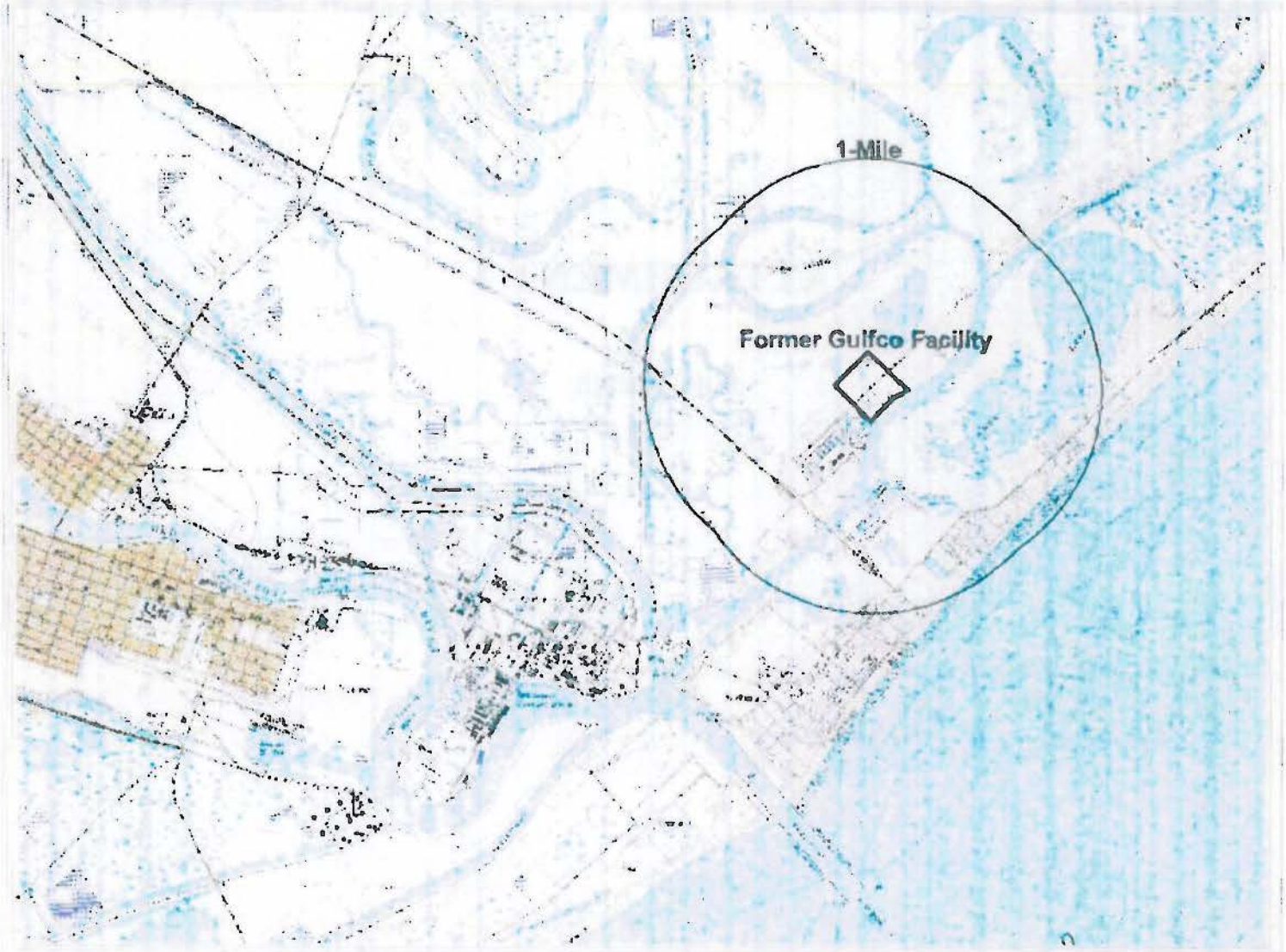
Source (for DOQQ)

The base data set used is the Freeport Northeast Digital Orthoquarter Quad (DOQQ), which is a digital version of an aerial photograph. This DOQQ was produced by the TNRCC using USGS guidelines. UTM NAD 83 Zone # 15

Figure 9

ATTACHMENT 2

Site Sketch



1 0 1 2 Miles

Legend

Distance from facility

Source (for DRG)

The base data set used is the Freeport, Texas Digital Raster Graphic (DRG), which is a scanned image of a U.S. Geological Survey topographic map.
UTM NAD 27 Zone # 15

ATTACHMENT 3

ATSDR Fact Sheets

1. Benzene
2. Chloroform
3. Tetrachloroethylene
4. Trichloroethylene

ATSDR
AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY

BENZENE
CAS # 71-43-2

Division of Toxicology and Environmental Medicine ToxFAQs™ August 2007

This fact sheet answers the most frequently asked health questions (FAQs) about benzene. For more information, call the ATSDR Information Center at 1-800-232-4636. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It is important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Benzene is a widely used chemical formed from both natural processes and human activities. Breathing benzene can cause drowsiness, dizziness, and unconsciousness; long-term benzene exposure causes effects on the bone marrow and can cause anemia and leukemia. Benzene has been found in at least 1,000 of the 1,684 National Priority List sites identified by the Environmental Protection Agency (EPA).

What is benzene?

Benzene is a colorless liquid with a sweet odor. It evaporates into the air very quickly and dissolves slightly in water. It is highly flammable and is formed from both natural processes and human activities.

Benzene is widely used in the United States; it ranks in the top 20 chemicals for production volume. Some industries use benzene to make other chemicals which are used to make plastics, resins, and nylon and other synthetic fibers. Benzene is also used to make some types of rubbers, lubricants, dyes, detergents, drugs, and pesticides. Natural sources of benzene include emissions from volcanoes and forest fires. Benzene is also a natural part of crude oil, gasoline, and cigarette smoke.

What happens to benzene when it enters the environment?

- Industrial processes are the main source of benzene in the environment.
- Benzene can pass into the air from water and soil.
- It reacts with other chemicals in the air and breaks down within a few days.
- Benzene in the air can attach to rain or snow and be carried back down to the ground.
- It breaks down more slowly in water and soil, and can pass through the soil into underground water.
- Benzene does not build up in plants or animals.

How might I be exposed to benzene?

- Outdoor air contains low levels of benzene from tobacco smoke, automobile service stations, exhaust from motor vehicles, and industrial emissions.
- Vapors (or gases) from products that contain benzene, such as glues, paints, furniture wax, and detergents, can also be a source of exposure.
- Air around hazardous waste sites or gas stations will contain higher levels of benzene.
- Working in industries that make or use benzene.

How can benzene affect my health?

Breathing very high levels of benzene can result in death, while high levels can cause drowsiness, dizziness, rapid heart rate, headaches, tremors, confusion, and unconsciousness. Eating or drinking foods containing high levels of benzene can cause vomiting, irritation of the stomach, dizziness, sleepiness, convulsions, rapid heart rate, and death.

The major effect of benzene from long-term exposure is on the blood. Benzene causes harmful effects on the bone

marrow and can cause a decrease in red blood cells leading to anemia. It can also cause excessive bleeding and can affect the immune system, increasing the chance for infection.

Some women who breathed high levels of benzene for many months had irregular menstrual periods and a decrease in the size of their ovaries, but we do not know for certain that benzene caused the effects. It is not known whether benzene will affect fertility in men.

How likely is benzene to cause cancer?

Long-term exposure to high levels of benzene in the air can cause leukemia, particularly acute myelogenous leukemia, often referred to as AML. This is a cancer of the blood-forming organs. The Department of Health and Human Services (DHHS) has determined that benzene is a known carcinogen. The International Agency for Research on Cancer (IARC) and the EPA have determined that benzene is carcinogenic to humans.

How can benzene affect children?

Children can be affected by benzene exposure in the same ways as adults. It is not known if children are more susceptible to benzene poisoning than adults.

Benzene can pass from the mother's blood to a fetus. Animal studies have shown low birth weights, delayed bone formation, and bone marrow damage when pregnant animals breathed benzene.

How can families reduce the risks of exposure to benzene?

Benzene exposure can be reduced by limiting contact with gasoline and cigarette smoke. Families are encouraged not to smoke in their house, in enclosed environments, or near their children.

Is there a medical test to determine whether I've been exposed to benzene?

Several tests can show if you have been exposed to benzene. There is a test for measuring benzene in the breath; this test must be done shortly after exposure. Benzene can also be measured in the blood; however, since benzene disappears rapidly from the blood, this test is only useful for recent exposures.

In the body, benzene is converted to products called metabolites. Certain metabolites can be measured in the urine. The metabolite S-phenylmercapturic acid in urine is a sensitive indicator of benzene exposure. However, this test must be done shortly after exposure and is not a reliable indicator of how much benzene you have been exposed to, since the metabolites may be present in urine from other sources.

Has the federal government made recommendations to protect human health?

The EPA has set the maximum permissible level of benzene in drinking water at 5 parts benzene per billion parts of water (5 ppb).

The Occupational Safety and Health Administration (OSHA) has set limits of 1 part benzene per million parts of workplace air (1 ppm) for 8 hour shifts and 40 hour work weeks.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 2007. Toxicological Profile for Benzene (Update). Atlanta, GA: U.S. Department of Public Health and Human Services, Public Health Service.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology and Environmental Medicine, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-800-232-4636, FAX: 770-488-4178. ToxFAQs Internet address via WWW is http://www.atsdr.cdc.gov/toxfaq.html. ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

ATSDR
AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY

CHLOROFORM
CAS # 67-66-3

This fact sheet answers the most frequently asked health questions (FAQs) about chloroform. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It's important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Exposure to chloroform can occur when breathing contaminated air or when drinking or touching the substance or water containing it. Breathing chloroform can cause dizziness, fatigue, and headaches. Breathing chloroform or ingesting chloroform over long periods of time may damage your liver and kidneys. It can cause sores if large amounts touch your skin. This substance has been found in at least 717 of the 1,430 National Priorities List sites identified by the Environmental Protection Agency (EPA).

What is chloroform?

(Pronounced klôr'ə-fôrm')

Chloroform is a colorless liquid with a pleasant, nonirritating odor and a slightly sweet taste. It will burn only when it reaches very high temperatures.

In the past, chloroform was used as an inhaled anesthetic during surgery, but it isn't used that way today. Today, chloroform is used to make other chemicals and can also be formed in small amounts when chlorine is added to water.

Other names for chloroform are trichloromethane and methyl trichloride.

What happens to chloroform when it enters the environment?

- Chloroform evaporates easily into the air.
- Most of the chloroform in air breaks down eventually, but it is a slow process.
- The breakdown products in air include phosgene and hydrogen chloride, which are both toxic.
- It doesn't stick to soil very well and can travel through soil to groundwater.
- Chloroform dissolves easily in water and some of it may break down to other chemicals.
- Chloroform lasts a long time in groundwater.
- Chloroform doesn't appear to build up in great amounts in plants and animals.

How might I be exposed to chloroform?

- Drinking water or beverages made using water containing chloroform.
- Breathing indoor or outdoor air containing it, especially in the workplace.
- Eating food that contains it.
- Skin contact with chloroform or water that contains it, such as in swimming pools.

How can chloroform affect my health?

Breathing about 900 parts of chloroform per million parts air (900 ppm) for a short time can cause dizziness, fatigue, and headache. Breathing air, eating food, or drinking water containing high levels of chloroform for long periods of time may damage your liver and kidneys. Large amounts of chloroform can cause sores when chloroform touches your skin.

It isn't known whether chloroform causes reproductive effects or birth defects in people.

Animal studies have shown that miscarriages occurred in rats and mice that breathed air containing 30 to 300 ppm chloroform during pregnancy and also in rats that ate chloroform during pregnancy. Offspring of rats and mice that breathed chloroform during pregnancy had birth defects. Abnormal sperm were found in mice that breathed air containing 400 ppm chloroform for a few days.

How likely is chloroform to cause cancer?

The Department of Health and Human Services (DHHS) has determined that chloroform may reasonably be anticipated to be a carcinogen.

Rats and mice that ate food or drank water with chloroform developed cancer of the liver and kidneys.

Is there a medical test to show whether I've been exposed to chloroform?

Although the amounts of chloroform in the air that you exhale and in blood, urine, and body tissues can be measured, there is no reliable test to determine how much chloroform you have been exposed to or whether you will experience any harmful effects.

The measurement of chloroform in body fluids and tissues may help to determine if you have come into contact with large amounts of chloroform, but these tests are useful for only a short time after you are exposed. Chloroform in your body might also indicate that you have come into contact with other chemicals.

Has the federal government made recommendations to protect human health?

The EPA drinking water limit for total trihalomethanes, a class of chemicals that includes chloroform, is 100 micrograms per liter of water (100 µg/L).

The EPA requires that spills or accidental releases of 10 pounds or more of chloroform into the environment be reported to the EPA.

The Occupational Safety and Health Administration (OSHA) has set the maximum allowable concentration of chloroform in workroom air during an 8-hour workday in a 40-hour workweek at 50 ppm.

Glossary

Carcinogenicity: A substance with the ability to cause cancer.

CAS: Chemical Abstracts Service.

Ingesting: Taking food or drink into your body.

Microgram (µg): One millionth of a gram.

Miscarriage: Pregnancy loss.

ppm: Parts per million.

References

This ToxFAQs information is taken from the 1997 Toxicological Profile for Chloroform (update) produced by the Agency for Toxic Substances and Disease Registry, Public Health Service, U.S. Department of Health and Human Services, Public Health Service in Atlanta, GA.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone:1-888-422-8737, FAX: 770-488-4178. ToxFAQs Internet address via WWW is http://www.atsdr.cdc.gov/toxfaq.html ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

ATSDR
AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY

TETRACHLOROETHYLENE
CAS # 127-18-4

This fact sheet answers the most frequently asked health questions (FAQs) about tetrachloroethylene. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It's important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Tetrachloroethylene is a manufactured chemical used for dry cleaning and metal degreasing. Exposure to very high concentrations of tetrachloroethylene can cause dizziness, headaches, sleepiness, confusion, nausea, difficulty in speaking and walking, unconsciousness, and death. Tetrachloroethylene has been found in at least 771 of the 1,430 National Priorities List sites identified by the Environmental Protection Agency (EPA).

What is tetrachloroethylene?

(Pronounced tĕt′rə-klôr′ ō-ĕth′ə-lēn′)

Tetrachloroethylene is a manufactured chemical that is widely used for dry cleaning of fabrics and for metal-degreasing. It is also used to make other chemicals and is used in some consumer products.

Other names for tetrachloroethylene include perchloroethylene, PCE, and tetrachloroethene. It is a nonflammable liquid at room temperature. It evaporates easily into the air and has a sharp, sweet odor. Most people can smell tetrachloroethylene when it is present in the air at a level of 1 part tetrachloroethylene per million parts of air (1 ppm) or more, although some can smell it at even lower levels.

What happens to tetrachloroethylene when it enters the environment?

- Much of the tetrachloroethylene that gets into water or soil evaporates into the air.
- Microorganisms can break down some of the tetrachloroethylene in soil or underground water.
- In the air, it is broken down by sunlight into other chemicals or brought back to the soil and water by rain.
- It does not appear to collect in fish or other animals that live in water.

How might I be exposed to tetrachloroethylene?

- When you bring clothes from the dry cleaners, they will release small amounts of tetrachloroethylene into the air.
- When you drink water containing tetrachloroethylene, you are exposed to it.

How can tetrachloroethylene affect my health?

High concentrations of tetrachloroethylene (particularly in closed, poorly ventilated areas) can cause dizziness, headache, sleepiness, confusion, nausea, difficulty in speaking and walking, unconsciousness, and death.

Irritation may result from repeated or extended skin contact with it. These symptoms occur almost entirely in work (or hobby) environments when people have been accidentally exposed to high concentrations or have intentionally used tetrachloroethylene to get a "high."

In industry, most workers are exposed to levels lower than those causing obvious nervous system effects. The health effects of breathing in air or drinking water with low levels of tetrachloroethylene are not known.

Results from some studies suggest that women who work in dry cleaning industries where exposures to tetrachloroethyl-

ene can be quite high may have more menstrual problems and spontaneous abortions than women who are not exposed. However, it is not known if tetrachloroethylene was responsible for these problems because other possible causes were not considered.

Results of animal studies, conducted with amounts much higher than those that most people are exposed to, show that tetrachloroethylene can cause liver and kidney damage. Exposure to very high levels of tetrachloroethylene can be toxic to the unborn pups of pregnant rats and mice. Changes in behavior were observed in the offspring of rats that breathed high levels of the chemical while they were pregnant.

How likely is tetrachloroethylene to cause cancer?

The Department of Health and Human Services (DHHS) has determined that tetrachloroethylene may reasonably be anticipated to be a carcinogen. Tetrachloroethylene has been shown to cause liver tumors in mice and kidney tumors in male rats.

Is there a medical test to show whether I've been exposed to tetrachloroethylene?

One way of testing for tetrachloroethylene exposure is to measure the amount of the chemical in the breath, much the same way breath-alcohol measurements are used to determine the amount of alcohol in the blood.

Because it is stored in the body's fat and slowly released into the bloodstream, tetrachloroethylene can be detected in the breath for weeks following a heavy exposure.

Tetrachloroethylene and trichloroacetic acid (TCA), a breakdown product of tetrachloroethylene, can be detected in the blood. These tests are relatively simple to perform. These tests aren't available at most doctors' offices, but can be performed at special laboratories that have the right equipment.

Because exposure to other chemicals can produce the same breakdown products in the urine and blood, the tests for breakdown products cannot determine if you have been exposed to tetrachloroethylene or the other chemicals.

Has the federal government made recommendations to protect human health?

The EPA maximum contaminant level for the amount of tetrachloroethylene that can be in drinking water is 0.005 milligrams tetrachloroethylene per liter of water (0.005 mg/L).

The Occupational Safety and Health Administration (OSHA) has set a limit of 100 ppm for an 8-hour workday over a 40-hour workweek.

The National Institute for Occupational Safety and Health (NIOSH) recommends that tetrachloroethylene be handled as a potential carcinogen and recommends that levels in workplace air should be as low as possible.

Glossary

Carcinogen: A substance with the ability to cause cancer.

CAS: Chemical Abstracts Service.

Milligram (mg): One thousandth of a gram.

Nonflammable: Will not burn.

References

This ToxFAQs information is taken from the 1997 Toxicological Profile for Tetrachloroethylene (update) produced by the Agency for Toxic Substances and Disease Registry, Public Health Service, U.S. Department of Health and Human Services, Public Health Service in Atlanta, GA.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 770-488-4178. ToxFAQs Internet address via WWW is http://www.atsdr.cdc.gov/toxfaq.html ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

ATSDR
AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY

TRICHLOROETHYLENE

CAS # 79-01-6

This fact sheet answers the most frequently asked health questions (FAQs) about trichloroethylene. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. This information is important because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Trichloroethylene is a colorless liquid which is used as a solvent for cleaning metal parts. Drinking or breathing high levels of trichloroethylene may cause nervous system effects, liver and lung damage, abnormal heartbeat, coma, and possibly death. Trichloroethylene has been found in at least 852 of the 1,430 National Priorities List sites identified by the Environmental Protection Agency (EPA).

What is trichloroethylene?

Trichloroethylene (TCE) is a nonflammable, colorless liquid with a somewhat sweet odor and a sweet, burning taste. It is used mainly as a solvent to remove grease from metal parts, but it is also an ingredient in adhesives, paint removers, typewriter correction fluids, and spot removers.

Trichloroethylene is not thought to occur naturally in the environment. However, it has been found in underground water sources and many surface waters as a result of the manufacture, use, and disposal of the chemical.

What happens to trichloroethylene when it enters the environment?

- Trichloroethylene dissolves a little in water, but it can remain in ground water for a long time.
- Trichloroethylene quickly evaporates from surface water, so it is commonly found as a vapor in the air.
- Trichloroethylene evaporates less easily from the soil than from surface water. It may stick to particles and remain for a long time.
- Trichloroethylene may stick to particles in water, which will cause it to eventually settle to the bottom sediment.
- Trichloroethylene does not build up significantly in plants and animals.

How might I be exposed to trichloroethylene?

- Breathing air in and around the home which has been contaminated with trichloroethylene vapors from shower water or household products such as spot removers and typewriter correction fluid.
- Drinking, swimming, or showering in water that has been contaminated with trichloroethylene.
- Contact with soil contaminated with trichloroethylene, such as near a hazardous waste site.
- Contact with the skin or breathing contaminated air while manufacturing trichloroethylene or using it at work to wash paint or grease from skin or equipment.

How can trichloroethylene affect my health?

Breathing small amounts may cause headaches, lung irritation, dizziness, poor coordination, and difficulty concentrating.

Breathing large amounts of trichloroethylene may cause impaired heart function, unconsciousness, and death. Breathing it for long periods may cause nerve, kidney, and liver damage.

Drinking large amounts of trichloroethylene may cause nausea, liver damage, unconsciousness, impaired heart function, or death.

Drinking small amounts of trichloroethylene for long periods may cause liver and kidney damage, impaired immune system function, and impaired fetal development in pregnant women, although the extent of some of these effects is not yet clear.

Skin contact with trichloroethylene for short periods may cause skin rashes.

How likely is trichloroethylene to cause cancer?

Some studies with mice and rats have suggested that high levels of trichloroethylene may cause liver, kidney, or lung cancer. Some studies of people exposed over long periods to high levels of trichloroethylene in drinking water or in workplace air have found evidence of increased cancer. Although, there are some concerns about the studies of people who were exposed to trichloroethylene, some of the effects found in people were similar to effects in animals.

In its 9th Report on Carcinogens, the National Toxicology Program (NTP) determined that trichloroethylene is "reasonably anticipated to be a human carcinogen." The International Agency for Research on Cancer (IARC) has determined that trichloroethylene is "probably carcinogenic to humans."

Is there a medical test to show whether I've been exposed to trichloroethylene?

If you have recently been exposed to trichloroethylene, it can be detected in your breath, blood, or urine. The breath test, if it is performed soon after exposure, can tell if you have been exposed to even a small amount of trichloroethylene.

Exposure to larger amounts is assessed by blood and urine tests, which can detect trichloroethylene and many of its breakdown products for up to a week after exposure. However, exposure to other similar chemicals can produce the same breakdown products, so their detection is not absolute proof of exposure to trichloroethylene. This test isn't available at most doctors' offices, but can be done at special laboratories that have the right equipment.

Has the federal government made recommendations to protect human health?

The EPA has set a maximum contaminant level for trichloroethylene in drinking water at 0.005 milligrams per liter (0.005 mg/L) or 5 parts of TCE per billion parts water.

The EPA has also developed regulations for the handling and disposal of trichloroethylene.

The Occupational Safety and Health Administration (OSHA) has set an exposure limit of 100 parts of trichloroethylene per million parts of air (100 ppm) for an 8-hour workday, 40-hour workweek.

Glossary

Carcinogenicity: The ability of a substance to cause cancer.
CAS: Chemical Abstracts Service.
Evaporate: To change into a vapor or gas.
Milligram (mg): One thousandth of a gram.
Nonflammable: Will not burn.
ppm: Parts per million.
Sediment: Mud and debris that have settled to the bottom of a body of water.
Solvent: A chemical that dissolves other substances.

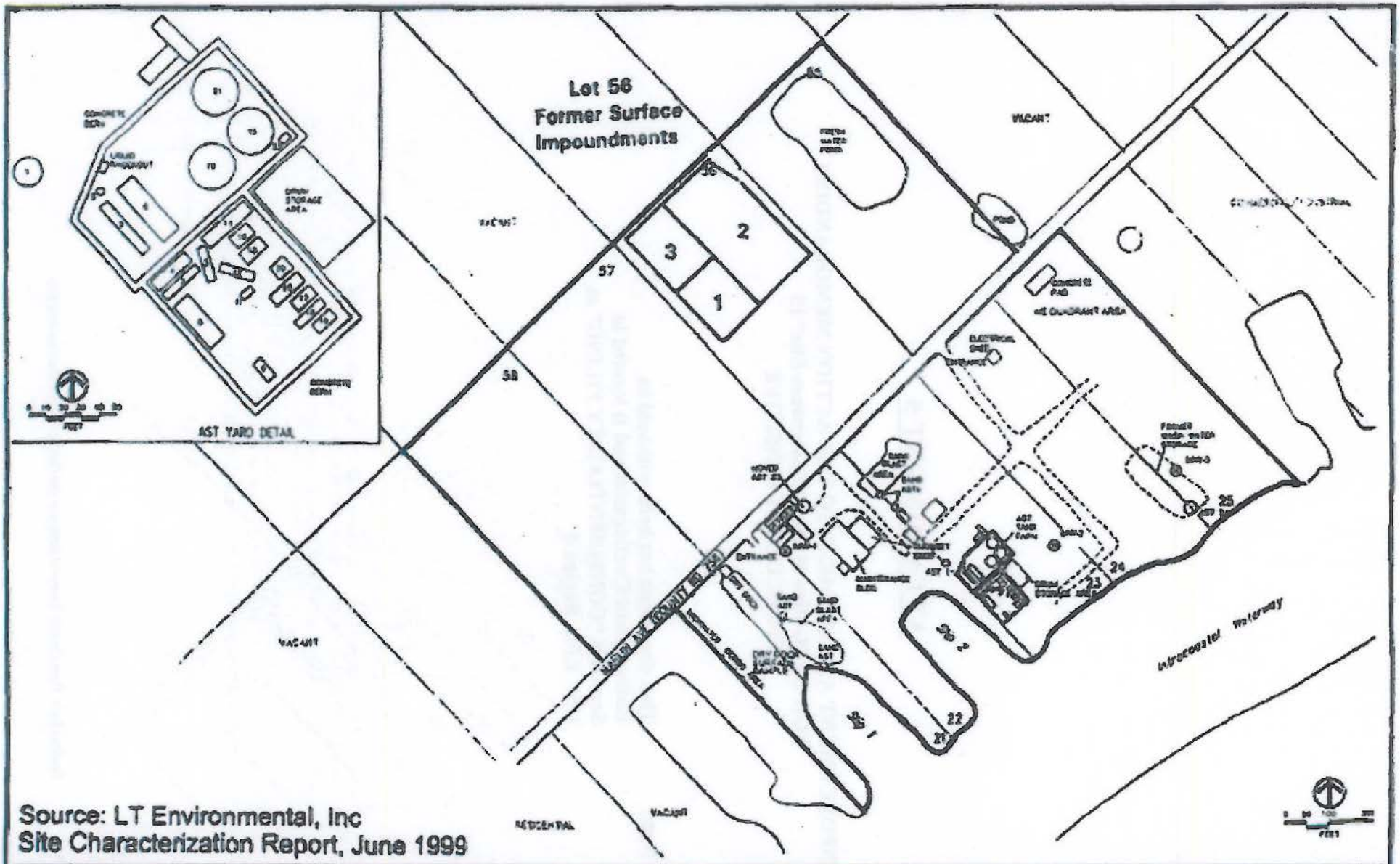
References

This ToxFAQs information is taken from the 1997 Toxicological Profile for Trichloroethylene (update) produced by the Agency for Toxic Substances and Disease Registry, Public Health Service, U.S. Department of Health and Human Services, Public Health Service in Atlanta, GA.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 770-488-4178. ToxFAQs™ Internet address is http://www.atsdr.cdc.gov/toxfaq.html . ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

ATTACHMENT 4

Drainage Pathway



TNRCC

Figure 2

Facility Features Map

Gulfco Marine Maintenance

Freeport, Brazoria County, Texas

EPA ID. No. TXD055144539

ATTACHMENT 5

ENFORCEMENT ATTACHMENT TO THE ACTION MEMORANDUM FOR the "Gulfco Marine Maintenance Site" IS ENFORCEMENT SENSITIVE

Note: **This document has been withheld as Enforcement Confidential and is located in Separate "CONFIDENTIALITY FILING" at U.S. EPA, Region 6**

APPENDIX B
LIST OF RESPONDENTS

Administrative Order on Consent for Removal Action
Gulfco Marine Maintenance Superfund Site
U.S. EPA Region VI
CERCLA Docket No. 06-13-10

1. The Dow Chemical Company
2. Chromalloy American Corporation
3. LDL Coastal Limited, L.P.

APPENDIX C
GULFCO MARINE MAINTENANCE SUPERFUND SITE MAP

Administrative Order on Consent for Removal Action
Gulfco Marine Maintenance Superfund Site
U.S. EPA Region VI
CERCLA Docket No. 06-13-10

EXPLANATION

Gulfco Marine Maintenance Site Boundary (approximate)

Lot Boundary (approximate)

N

Approx. Scale in Feet

0 125 250

Source of photo: H-GAC, Texas aerial photograph, 2006.

GULFCO MARINE MAINTENANCE
FREEPORT, BRAZORIA COUNTY, TEXAS

Figure 2

SITE MAP

PROJECT: 1352	BY: ZGK	REVISIONS
DATE: FEB., 2009	CHECKED: EFP	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS

APPENDIX D
WORK PLAN

Administrative Order on Consent for Removal Action
Gulfco Marine Maintenance Superfund Site
U.S. EPA Region VI
CERCLA Docket No. 06-13-10

GULFCO MARINE MAINTENANCE SUPERFUND SITE

REMOVAL ACTION WORK PLAN

JUNE 9, 2010

June 9, 2010

GULFCO MARINE MAINTENANCE SUPERFUND SITE
REMOVAL ACTION WORK PLAN

I. INTRODUCTION

A. Purpose of the Work Plan

This Work Plan sets forth certain requirements for completion of a removal action to remove or eliminate certain wastes, thereby eliminating or reducing risks from potential exposure pathways from those wastes at or from the Gulfco Marine Maintenance Superfund Site (the "Site"). The work described herein shall be implemented upon EPA's signing of the Administrative Settlement Agreement and Order on Consent for Removal Action (AOC).

B. Description of Action

An aboveground storage tank farm ("AST Tank Farm") located in the southern portion is to be addressed by this Removal Action. The AST Tank Farm is a concrete bermed area containing 14 above-ground storage tanks (a fifteenth tank, Tank No. 100, which was empty, was removed from the Site in September 2008 by Hurricane Ike storm surge), three of which appear to be empty. The tank locations and designations are shown on Figure 1. The contents of the tanks are to be removed and the tanks demolished. The concrete containment slab and walls will remain in place, except that the walls shall be breached so that rainfall will freely drain from the structure. Any accumulated water contained within the bermed area shall be characterized and properly managed. Any buried pipes will be capped at the surface after removing the contents of the pipes. The tanks' contents and structures, containerized wastes, and debris will be properly managed off-site.

The specific objectives for the AST Tank Farm Removal Action are: (1) to prevent the release of chemicals of concern that are stored in the tanks and any other containers, and (2) to prevent the exposure of site workers and visitors to chemicals of concern remaining in the tanks following removal of the stored liquids and other materials. The tanks contain water, various organic phases, oily sludges, and sand, rust solids, and debris. The tanks' contents include: benzene; chloroform; 1,2-dichloroethane; trichloroethylene; tetrachloroethylene; vinyl chloride; and petroleum hydrocarbons in various concentrations.

II. WORK TO BE PERFORMED

A. Preconstruction Activities

Preconstruction activities will consist of a Site inspection and assessment, and preparation of a Health and Safety Plan (HASP). The HASP will be prepared in compliance with Occupational Safety and Health Administration and EPA requirements. The HASP will be submitted to EPA and will be in place prior to any onsite construction activities. Site inspection and assessment shall begin with cutting weeds and vegetation as necessary to perform a visual inspection of the removal action area. This inspection shall be performed for safety purposes and to identify any drums or containers, which shall be visually inspected, inventoried, labeled with a control number, and logged, as necessary.

Sampling and Analysis Plan

Sampling of the AST contents was performed during the period from December 14 through 15, 2006 in accordance with a Work Plan dated November 6, 2006 (and addendum dated December 1, 2006) that were approved by an EPA letter dated December 4, 2006. As part of sampling activities, fluid levels were gauged in all ASTs and samples were collected from separate solid and liquid phases within the tanks, where present. In addition to the AST samples, samples of water accumulated within the north and south containment areas of the AST Tank Farm were collected on December 14, 2006. The AST and water samples were transported to Gulf Coast Analytical Laboratories, Inc. (GCAL) in Baton Rouge, Louisiana for analysis for various waste characterization parameters (e.g., reactivity, corrosivity, ignitability, toxicity). The results of these analyses are summarized on attached Tables 1 through 4. The original laboratory reports for these analyses were included in a report describing the tank sampling activities that was submitted to EPA on April 4, 2007. A summary of the projected tank volumes based on the gauging estimates is provided in Table 5.

The AST and water sample data listed in Tables 1 through 4 will be used for the classification and profiling of waste streams for off-site management (treatment, disposal and/or recycling) as acceptable to the intended management facilities. Possible off-site waste management facilities are listed in Table 6. All materials will be managed at a facility that is in compliance with EPA's "Off-Site Rule". Should more recent or additional data be required by these facilities or the tank removal contractor, additional sampling and analyses will be performed as described below. Additional samples may be collected from the accumulated water within each of the north and south containment areas if necessary to evaluate possible discharge or other management options for that material. Sampling of accumulated sludge (if any) within the containment berms will be performed as necessary.

Tank Gauging – Prior to sampling or content removal (if sampling is not required), each AST will be gauged to verify the approximate content volume. For gauging and sampling purposes, the tanks will be accessed utilizing ladders and/or man lifts. Gauging will be performed using various devices, such as weighted lines, gauge

rulers, visible means, or other appropriate method based on the tank size and location, content characteristics, and content volume.

Sample Collection – Samples will be collected using dippers, sampling thieves and/or other sampling devices as appropriate depending on tank size, content type (solid or liquid) and content volume in order to obtain a representative sample. One representative sample will be collected from each tank waste stream. Containment area water and sludge samples will be collected directly from the containment areas using dippers, bailers, and/or other appropriate devices.

All sampling equipment will be decontaminated prior to use. Disposable equipment meant to be used only once and discarded will be decontaminated prior to use, unless the equipment is properly packaged and sealed. All non-disposable components of the sampling equipment will be decontaminated as follows:

- Potable water rinse;
- Liqui-nox® detergent wash;
- DI water rinse;
- Liqui-nox® detergent wash;
- DI water rinse; and
- Air dry.

A methanol or hexane rinse may be used if evidence of organic staining is found after equipment has been cleaned. Following decontamination, the sampling equipment will be placed in bags or sealed to keep the equipment clean during storage. All liquids generated as a result of decontamination processes will be containerized and handled as investigation-derived waste (IDW).

Samples will be transferred from the sampling devices to sample containers in a central staging area near the AST Tank Farm. Sample containers will be prepared specifically for the required analyses by the analytical laboratory. Any required preservatives will be placed in the sample containers by the laboratory prior to shipment to the Site.

To prevent misidentification of samples, labels will be affixed to each sample container. Information will be written on the label with a permanent marker. The labels will be sufficiently durable to remain legible even when wet and will contain the following information:

- Sampling identification name;
- Name or initials of collector;
- Date and time of collection;
- Analysis required (if space on label allows); and
- Preservative inside bottle, if applicable.

Sample custody, packaging and shipment will be performed in accordance with Standard Operating Procedure (SOP) No. 6 in the approved Gulfco RI/FS Field Sampling

Plan (FSP) (PBW, 2006a). Samples will be placed in shipping coolers containing bagged, cubed ice immediately following collection. Samples will be shipped to the laboratory via an overnight courier service, generally on the day they are collected.

Evidence of collection, shipment, and laboratory receipt must be documented on a Chain-of-Custody record by the signature of the individuals collecting, shipping and receiving each sample. A sample is considered in custody if it is:

- In a person's actual possession;
- In view, after being in physical possession;
- Sealed so that no one can tamper with it, after having been in physical custody; and/or
- In a secured area restricted to authorized personnel.

Chain-of-Custody Records will be used, by all personnel, to record the collection and shipment of all samples. The Chain-of-Custody Record may specify the analyses to be performed and should contain at least the following information:

- Name and address of originating location of samples;
- Name of laboratory where samples are sent;
- Any pertinent directions/instructions to laboratory;
- Sample type (e.g., aqueous);
- Listing of all sample bottles, size, identification, collection date and time, and preservative, if any, and type of analysis to be performed by the laboratory;
- Sample ID;
- Date and time of sample collection; and
- Signature of collector as relinquishing, with date/time.

The Chain-of-Custody procedure will be as follows:

1) The field technician collecting the sample shall be responsible for initiating the Chain-of-Custody Record. Samples can be grouped for shipment on a common form.

2) Each time responsibility for custody of the samples changes, the receiving and relinquishing custodians will sign the record and note the date and time.

3) The Chain-of-Custody Record shall be sealed in a watertight container, placed in the shipping container, and the shipping container sealed prior to giving it to the carrier. The carrier waybill shall serve as an extension of the Chain-of-Custody Record between the final field custodian and receipt in the laboratory. The commercial carrier is not considered part of the COC chain and is not required to sign the COC.

4) Upon receipt in the laboratory, a designated individual shall open the shipping containers, measure and record cooler temperature, compare the contents with the

Chain-of-Custody Record, and sign and date the record. Any discrepancies shall be noted on the Chain-of-Custody Record.

5) If discrepancies occur, the samples in question shall be segregated from normal sample storage and the project manager will be notified for clarification.

6) Chain-of-Custody Records, including waybills, if any, shall be maintained as part of the project records.

Sample Analyses - The analytical suite for AST and accumulated sludge samples (if any) will be determined based on the requirements of the removal action contractor and/or the off-site waste management facility to be used for the specific waste stream to be evaluated. Based on the previous data in Table 4, containment area water samples (if needed) will be analyzed for volatile organic compounds (VOCs), pesticides and metals using the methods listed for water samples in the approved RI/FS FSP. Considering the intended use of these data, validation will be performed at Data Review Level 2 as described in the approved Gulfco RI/FS Quality Assurance Project Plan QAPP (PBW, 2006b). Sample analyses will be performed by GCAL, whose laboratory QAPP was provided as Appendix G of the RI/FS QAPP. All analytical data collected for this removal action shall be provided electronically to EPA.

Construction Quality Assurance Plan

The Construction Quality Assurance Plan (CQAP) for the removal action at the AST Tank Farm is provided below. This plan describes the project-specific components of the performance methods and quality assurance program to ensure that the completed project meets or exceeds all design criteria, plans, and specifications.

Responsibilities and Authorities - The Construction Quality Assurance (CQA) Officer will be Eric Pastor, P.E. of Pastor, Behling & Wheeler, LLC (PBW). Mr. Pastor will be assisted in the day-to-day project inspection activities by other PBW personnel, all of whom will have an appropriate level of engineering and/or consulting experience for their assigned responsibilities. EPA and/or its contractors may perform additional construction inspection/oversight at EPA's discretion.

CQA Qualifications - Mr. Pastor's and PBW's qualifications were provided to EPA in a letter dated August 26, 2005. As noted above, all inspection personnel will have an appropriate level of engineering and/or consulting experience for their assigned responsibilities.

CQA Inspection and Verification Activities – A CQA inspector will be on-site to monitor the performance of all tank content removal, truck loading, tank decontamination, and tank demolition activities; verify compliance with environmental requirements; and ensure compliance with all health and safety procedures. The CQA inspector will verify that removal action activities have been performed in accordance with this Work Plan and the project specifications. A CQA inspector will also collect the containment berm water and sludge (if any) samples as described above. CQA

inspection documentation will be performed in accordance with SOP No. 1 provided in Appendix A of the approved RI/FS FSP. This documentation will be retained in the project files in accordance with the requirements of Section XI of the AOC.

Regulatory Compliance Plan

In accordance with the National Contingency Plan, removal actions under Section 106 of CERCLA are required to meet the substantive requirements of other laws unless an ARAR waiver is granted by the lead regulatory agency. Compliance with the administrative requirements (e.g., permitting, administrative reviews, reporting, and record keeping) of other laws is not required under CERCLA. The substantive ARARs are divided into the three categories:

- Chemical-specific requirements, health- or risk-based numerical values, or methodologies that specify the acceptable amount or concentration of a chemical that may be found in, or discharged to, the environment;

- Location-specific requirements- restrictions placed on the types of activities that can be conducted or on the concentration of hazardous substances that can be present solely because of the location where they will be conducted; and

- Action-specific requirements- technology or activity-based requirements or limitations on actions taken with respect to hazardous wastes.

Chemical-specific requirements – The primary chemical-specific requirements for the removal action at the AST Tank Farm are the chemical-specific waste classification standards under 30 TAC 335 Subchapter R and the hazardous waste identification requirements in 40 CFR Part 261. These requirements will be used for the classification of the tank contents prior to removal and off-site management.

Location-specific requirements – No location-specific requirements were identified for this removal action.

Action-specific requirements – Action-specific requirements for the removal action at the Former AST Tank Farm include the following:

- Texas Commission on Environmental Quality (TCEQ) standards for hazardous waste generators (30 TAC Chapter 335, Subchapter C), including the Land Disposal Restrictions (Chapter 335, Subchapter 0) for any wastes to be landfilled will apply. Procedures to be implemented for compliance with generator requirements include completion of a One-Time Shipment Request for Texas Waste Code For Shipment of Hazardous and Class 1 Waste (TCEQ Form 0757) and/or other required forms. Compliance with off-site waste shipment requirements including, U.S. Department of Transportation (DOT) regulations contained in 49 C.F.R. 173, and 179 and placarded regulations in 49 C.F.R. 172 will be ensured through the use of only permitted waste haulers. Compliance with off-site waste management requirements, including Resource Conservation and Recovery Act (RCRA), 42 U.S.C. § 6901, *et seq.* at 40 C.F.R. 260 *et seq.* and

related Texas state requirements will be ensured through the use of only the potential facilities listed in Table 6. Compliance with the provisions of the NCP, 40 C.F.R. 300.440, with regard to EPA approval of the off-site waste management facilities will be performed through EPA approval of this Work Plan.

- TPDES permit requirements for wastewater discharge will be used to determine limits for discharge of water collected within the AST Tank Farm containment berms to the Intracoastal Waterway.

Waste Management Plan

The AST data listed in Tables 1 through 4, as supplemented by additional data collected through the sampling and analytical activities described in this Work Plan, will be used for the classification and profiling of waste streams for off-site management (treatment, disposal and/or recycling) as acceptable to the intended management facilities. Hazardous and non-hazardous wastes, as well as non-waste materials, shall be handled and managed in accordance with all applicable or relevant and appropriate requirements. To the extent possible based on tank content volumes, characteristics and waste classifications, the tank contents will be transferred directly from the tanks to the waste haulers (typically vacuum tankers) for liquid waste. Waste loads will be transported to one or more of the facilities listed in Table 6. All off-site transportation and management will be performed in accordance with applicable USDOT requirements. All materials will be managed at a facility that is in compliance with EPA's "Off-Site Rule". Wastewater from tank decontamination operations will be handled similarly. Following decontamination through triple rinsing, tanks not identified for re-use will be cut up and sold as scrap or disposed as non-hazardous waste. All loads will be properly manifested prior to leaving the Site.

Emissions Control Plan

During tank liquid content transfer operations, tank vapors will be vented through carbon canister or similar devices. Air exhaust from vacuum trucks and any other exhaust that potentially could contain volatile emissions shall be captured and treated onsite with vapor-phase carbon.

Ambient air monitoring will be periodically performed by the remediation contractor while tank contents are being transferred from the ASTs to trucks, and while gauging and sampling (if any) of the ASTs is being performed. Monitoring will be performed for total organic vapors using an organic vapor meter with a photoionization detector. Ambient air monitoring will be performed both within the work zone and on the downwind perimeter of the work area. Air monitoring results within the work area will be evaluated in accordance with procedures established in the HASP. If a sustained reading (more than 60 seconds) of 10 ppmv or higher is measured at a perimeter monitoring location, work activities upwind of that location will temporarily cease. Monitoring will then be performed at that location every five minutes for 15 minutes (three times). If concentrations of total organic vapors subside below the 10 ppmv action level, work may resume with continued focused monitoring performed at that location. If

total organic vapor concentrations do not subside below the 10 ppmv action level, or if vapor concentrations consistently return to 10 ppmv or higher after work is resumed, the PBW and EPA Project Managers will be notified and potential engineering and/or other controls and contingency plans will be discussed and implemented as necessary prior to further work resumption. During tank content transfer activities, additional monitoring may be performed using chemical-specific Draeger tubes. Monitoring measurements will be recorded by contractor personnel and will be included in the Final Report.

Contingency Plan

This contingency plan describes procedures to minimize hazards to human health and the environment from fires, explosions, or any unplanned sudden or non-sudden release of hazardous waste constituents, procedures to be followed in the event of a spill, and procedures to be followed for movement of equipment and personnel from low-lying areas during a high water event.

Spill Prevention – In order to minimize the potential for spills or release of hazardous constituents to the environment, liquid tank contents will be transferred directly to transport trucks when possible. Potential spills at the tanks during this process will be contained by the existing tank containment berms. Receiving trucks will be loaded within temporary loading areas constructed to contain potential spills during the loading process. Spill control and cleanup kits along with fire extinguishers and eye wash kits will be located in the AST Tank Farm and loading areas.

Spill Response/Notification – In the event of a spill, field crews will immediately contain the spill as necessary to prevent a release and notify on-site CQA and EPA representatives. If not on-site, the EPA OSC will be notified immediately thereafter. In the event of any spill which causes or threatens a release of waste material from the Site that constitutes an emergency situation or may present an immediate threat to public health or welfare or the environment, Respondents shall immediately notify the OSC or, in the event of his/her unavailability, the Regional Duty Officer, Emergency Planning and Response Branch, EPA Region 6, 214-665-3166, and the EPA Regional Emergency 24-hour telephone number, 1-866-372-7745. In addition, in the event of any release of a hazardous substance from the Site which, pursuant to Section 103 of CERCLA, requires reporting to the National Response Center, Respondents shall immediately notify the National Response Center at (800) 424-8802 and then the OSC at (866) 372-7745.-. A written report will be submitted to EPA within 7 days after a release of a hazardous substance from the Site that requires reporting to the National Response Center pursuant to Section 103(a) of CERCLA, 42 U.S.C. § 9603(a), setting forth the events that occurred and the measures taken or to be taken to mitigate any release or endangerment caused or threatened by the release and to prevent the recurrence of such a release.

Site Activities during High Water Event – In the event that a high water condition (storm surge or hurricane) is predicted for the Site during the performance of the Work, the remediation contractor will take appropriate precautions to secure tanks, staging areas and equipment. Depending on the specific conditions, these precautions may include evacuation of the Site. The remediation contractor and the CQA officer will work closely

with the EPA representatives to determine the appropriate precautions to be taken on a case by case basis depending on the timing and severity of the predicted high water conditions.

Health and Safety Plan

Prior to Site mobilization, the remediation contractor for the AST Tank Farm removal action will prepare a HASP in accordance with EPA's Standard Operating Safety Guide (PUB 9285.1-03, PB 92-963414, June 1992) and all currently applicable regulations found at 29 CFR 1910.120. The HASP will ensure the protection of the public health and safety during performance of the removal action and will be submitted to EPA for review. Changes to the plan recommended by EPA will be incorporated into the final plan that will be implemented during the pendency of the removal action. All requirements under the Occupational Safety and Health Act (OSHA) of 1970, 29 U.S.C. § 651 et seq., and under the laws of the State approved under Section 18 of the Federal OSHA laws, as well as other applicable safety and health requirements, will be followed. Federal OSHA requirements include Hazardous Materials Operation, 20 CFR § 1910, as amended by 54 Fed. Reg. 9317 (March, 1989), all OSHA General Industry (29 CFR § 1910) and Construction (29 CFR § 1926) standards wherever they are applicable, as well as OSHA record keeping and reporting regulations, and the EPA regulations set forth in 40 CFR § 300, relating to the conduct of work at Superfund sites.

Schedule

The AST Tank Farm removal action will be implemented as described herein. The HASP was previously submitted to EPA for information only but not approval on March 30, 2010. The removal action field activities shall be completed within ninety (90) calendar days of the Effective Date of the AOC. The Draft Tank Removal Report shall be submitted to EPA within one hundred twenty (120) calendar days of the Effective Date of the AOC. The Final Tank Removal Report shall be submitted to EPA within fourteen (14) calendar days following receipt of EPA comments on the draft Removal Report. Any associated documentation (e.g., transporter and disposal facility manifests, weigh tickets, etc.) received after the Final Report is submitted will be provided as an addendum to the report.

B. Mobilization and Site Preparation

Mobilization and site preparation will involve mobilizing personnel, equipment, supplies and incidentals onto the project site; establishing all offices and facilities necessary to implement the project; and preparation of the site for the construction work. The major components of site preparation are:

- Utility Connections - Supplying electrical and potable water sources within the work area limits.

- Clearing and Grubbing - Clearing and grubbing and/or mowing areas as required for access to the work and surrounding areas and for constructing roads, work areas, and staging areas.

- Temporary Road Construction - Constructing temporary roads as necessary to provide access and egress to the site, and access and egress to the work areas.

- Work/Staging Area - Constructing work, staging and containment areas.

C. Removal Action Activities

AST Tank Farm removal action activities will consist of the following tasks:

Task 1 – Accumulated Water Removal – The purpose of this task is to remove any water accumulated within the containment berms in order to facilitate subsequent removal action activities. Data from water samples and other related information will be submitted to the TCEQ for determination of discharge limits that meet substantive TPDES permit requirements. If the water sample concentrations do not exceed these limits, the water will be discharged directly to the Intracoastal Waterway. If the water sample concentrations exceed the discharge limits, then the water will be transported for off-site management at one of the facilities listed in Table 6, or another facility approved in advance by EPA. This task will include the following:

a. Sample and analyze the accumulated water, as needed, to confirm previous data, evaluate management options and facilitate removal;

b. As necessary, transfer the water to temporary storage tanks to allow the removal action to continue pending determination of water discharge/management options;

c. Appropriately manage (discharge or otherwise manage) the accumulated water based on the sample analyses and management option evaluation, in accordance with all applicable state and federal regulations; and

d. Secure all records documenting the water characterization and subsequent management.

Task 2 – Container Content Removal and Disposal - The purpose of this task is to remove residual materials within AST Tank Farm containers followed by off-site management. Specifically, the liquid and sludge/solid contents of the above-ground storage tanks will be removed from the tanks and either recycled or disposed at one of the potential facilities listed in Table 6. To the extent possible based on tank content volumes, characteristics and waste classifications, the liquid tank contents will be transferred directly from the tanks to the waste haulers (typically vacuum tankers). The removal method for the tank contents will be determined after selection of the remedial contractor and will be selected and implemented to control volatile emissions. Debris that is encountered will be removed by suitable methods and placed into lined roll-off containers that will be covered except while the debris is being added. Transport of

residual containerized materials/wastes to appropriate off-site management facilities will be performed in accordance with all applicable state and federal regulations. All records documenting the waste stream characteristics, classifications, quantities and final management locations will be secured as part of this task.

Task 3 – Container Removal - The purpose of this task is to remove containers associated with former Site operations (e.g., ASTs and drums) from the AST Tank Farm area. The following activities will be performed as part of this task:

a. Evaluate the potential for re-use of containers. Based on this evaluation, identify containers for re-use and containers for demolition and disposal/recycling;

b. Decontaminate containers intended for re-use. Implement decontamination procedures on a container-specific basis considering former content characteristics and process knowledge. Decontamination procedures for containers intended for re-use will include the following:

    1. Remove material adhered to container sides using shovel or other tool;

    2. Scrub with a brush and detergent (or alternative cleaning solution as appropriate);

    3. Rinse with water;

    4. Repeat above steps; and

    5. Evaluate container condition and repeat one or more of above steps as necessary to provide visible indication of sufficient decontamination for container re-use. Alternative decontamination methods may be used as necessary and appropriate depending on the container contents and its intended re-use.

c. Manage all decontamination fluids in accordance with applicable state and federal regulations. Document decontamination procedures used;

d. Remove re-usable containers from the Site following proper decontamination. Document recipient of container to be reused; and

e. Decontaminate and demolish all containers not suitable for re-use.

Decontamination procedures for containers intended for demolition will include the following:

    1. Remove material adhered to container sides using shovel or other tool;

    2. Scrub with a brush and detergent (or alternative cleaning solution as appropriate);

3. Rinse with water; and

4. Evaluate container condition and repeat one or more of above steps as necessary to provide visible indication of sufficient decontamination for container demolition. Alternative decontamination methods may be used as necessary and appropriate depending on the container contents and the demolition method to be used.

Demolition may be performed on or off-site. Secure a certificate of destruction for each item demolished. Transport tank demolition debris off-site for recycling or disposal.

Task 4 – AST Containment Area Decontamination - The purpose of this task is to decontaminate the former AST containment areas. The following activities will be performed as part of this task:

a. Sample and analyze residual sludge (if any) within the containment berms to evaluate management options and facilitate waste classification (if needed);

b. Remove and manage the sludge (if any) in accordance with all applicable state and federal regulations;

c. Thoroughly pressure-wash the concrete floor and berms of the former AST Tank Farm and manage all washwater in accordance with all applicable state and federal regulations.

d. Demolish sections of the concrete containment berms at multiple locations as needed to preclude potential future water accumulation within this area (the number, area and locations where the berms will be demolished will be determined after an evaluation of water flow/accumulation patterns within the containment area during the pressure washing); and

e. Secure all records documenting the sludge characterization and subsequent management.

D. Emissions Control

The emissions control plan described above will be implemented throughout the removal and material-handling phases of the removal action to control air emissions. As noted therein, the air exhaust from any vacuum trucks and any other exhaust that potentially could contain volatile emissions (not including routine motor vehicle/construction equipment exhaust) will be captured and treated onsite with vapor-phase carbon.

E. Site Restoration and Demobilization

After completion of the removal action, the temporary roads and work areas will be dismantled and removed. Personnel, equipment, office trailer, supplies and incidentals

that were used on the removal project will be removed from the site, unless required for the completion of other work at the Site.

F. Preparation of Final Report

Any associated documentation (e.g., transporter and disposal facility manifests, weigh tickets, etc.) received after the Final Report is submitted will be provided as an addendum to the report. The Final Report will summarize the activities performed and will be submitted to the RPM/OSC for review and approval. The Final Report will include a listing of quantities and types of materials removed off-site or handled on-site, a discussion of removal and disposal options considered for those materials removed, a listing of the ultimate destination(s) of those materials, a presentation of the analytical results of all sampling and analyses performed, and accompanying appendices containing all relevant documentation generated during the removal action.

III. REFERENCES

Guevara, Jairo, 1989. Record of Communication for Reconnaissance Inspection of Former Surface Impoundments of Fish Engineering & Construction, Inc. November 28.

LT Environmental, Inc. (LTE), 1999. Site Characterization Report. Hercules Marine Service Site Freeport, Brazoria County Texas. June.

Pastor, Behling & Wheeler, LLC (PBW), 2006a. Sampling and Analysis Plan – Volume I Field Sampling Plan, Gulfco Marine Maintenance Site, Freeport, Texas. March 14.

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TABLES

Table 1
Gulfco Former AST Tank Farm
Tank Sample - RCI/Toxicity Data

Tank No.	Sample ID.	Physical Description	pH	Reactivity Sulfide	Reactivity Cyanide	Flashpoint	Arsenic	Barium	Benzene	Cadmium	Carbon Tetrachloride
				ppm	ppm	Deg. F.	mg/L	mg/L	mg/L	mg/L	mg/L
Tank No. 2	TK-2-O	Aqueous Phase	NA	NA	NA	NA	<0.0024	12.1	<0.177	NA	NA
	TK-2-O	Organic Phase	5.95	112	<250	>212	<0.0024	8.19	0.415 J	0.0033 B	<0.013
	TK-2-S	Solids- sand, debris, etc.	NA	NA	NA	NA	<0.0024	2.82	24.1	0.0038 B	<0.256
Tank No. 4	TK-4-A	Oily Water	7.4	<96	<250	>212	<0.0024	29.7	<0.000177	0.016	<0.000336
Tank No. 6	TK-6-S	Rust Solids	NA	NA	NA	NA	<0.0024	0.89 B	<0.009	0.002 B	<0.00512
Tank No. 13	TK-13-O	Oily sludge	6.89	80	<250	>212	<0.0024	0.27 B	13.8	<0.00022	<0.128
Tank No. 14	None	Empty (2 in. of rust solids)	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tank No. 15	TK-15-O	Oily sludge	6.38	<80	<250	126	<0.0024	0.22 B	5.3	<0.00022	<0.00512
Tank No. 16	TK-16-O	Oily sludge	6.31	<80	<250	>212	<0.0024	0.39 B	<0.009	<0.00022	<0.00512
Tank No. 17	TK-17-S	Rust solids	NA	NA	NA	NA	<0.0024	0.56 B	<0.009	0.0012 B	<0.00512
Tank No. 18	TK-18-O	Light Organic Phase	3.37	<417	<250	90	<0.024	0.53 B	<9	<0.0022	<5.12
Tank No. 19	TK-19-O	Oily sludge	6.75	216	<250	104	<0.0024	1.33	<4.5	<0.00022	<2.56
Tank No. 21	TK-21-A	Oily water	8.5	<80	<250	>212	<0.0024	0.0021 B	51.6 J	<0.00022	<5.12
Tank No. 22	TK-22-O	Oily sludge	6.74	<80	<250	>212	<0.0024	0.28 B	<0.009	<0.00022	<0.00512
Tank No. 23	TK-23-O (mg/kg)	Appears to be diesel	6.72	160	<250	126	<0.16	0.26B	<2.08	<0.013	<2.4
North Containment Area	Dike North	Water	NA	NA	NA	NA	0.012	1.17	0.011	<0.00019	0.00889 J
South Containment Area	Dike South	Water	NA	NA	NA	NA	0.024	0.49	0.015	<0.00019	<0.000336
Hazardous Criteria			</= 2 or >/= 12.5	>/= 500	>/= 250	<140	5	100	0.5	1	0.5

Table 1
Gulfco Former AST Tank Farm
Tank Sample - RCI/Toxicity Data

Tank No.	Sample ID.	Physical Description	Chlordane	Chlorobenzene	Chloroform	Chromium	o-Cresol	m,p-Cresol	Cresol	1,2-Dichloroethane	1,4-Dichlorobenzene	2,4'-D
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Tank No. 2	TK-2-O	Aqueous Phase	NA	<0.162	1.5 J	0.16	<0.409	<0.368	NA	7.97	<0.0538	NA
	TK-2-O	Organic Phase	<0.00008	<0.021	2.25	<0.0012	<0.0012	<0.0014	<0.003	8.4	<0.0011	<0.0027
	TK-2-S	Solids- sand, debris, etc.	<0.00008	<0.426	20.7	0.0045 B	0.00275 J	<0.0014	0.00414 J	203	<0.0011	<0.0027
Tank No. 4	TK-4-A	Oily Water	NA	<0.000162	<0.00018	<0.0012	<0.00327	<0.00295	NA	<0.000176	<0.000538	<0.00027
Tank No. 6	TK-6-S	Rust Solids	<0.00008	<0.00852	<0.00776	<0.0012	<0.0012	<0.0014	<0.003	<0.0082	<0.0011	<0.0027
Tank No. 13	TK-13-O	Oily sludge	<0.00008	<0.213	1.32 J	<0.0012	<0.0012	0.00143 J	<0.003	2.73 J	<0.0011	<0.0027
Tank No. 14	None	Empty (2 in. of rust solids)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tank No. 15	TK-15-O	Oily sludge	<0.00008	<0.00852	<0.00776	<0.0012	<0.013 J	<0.0014	0.013 J	<0.0082	<0.0011	<0.0027
Tank No. 16	TK-16-O	Oily sludge	<0.00008	<0.00852	<0.00776	<0.0012	<0.0012	0.037 J	0.037 J	<0.0082	<0.0011	<0.0027
Tank No. 17	TK-17-S	Rust solids	<0.0004	<0.00852	<0.00776	<0.0012	<0.0012	<0.0014	<0.003	<0.0082	<0.0011	<0.0027
Tank No. 18	TK-18-O	Light Organic Phase	<0.01431	<8.52	216	<0.012	<0.1764	<0.2134	<0.444	<8.2	<0.1577	<0.0027
Tank No. 19	TK-19-O	Oily sludge	<0.00008	<4.26	<3.88	<0.0012	0.0046 J	<0.0014	0.00486 J	<4.1	<0.0011	<0.0027
Tank No. 21	TK-21-A	Oily water	<0.00008	<8.52	2100	<0.0012	<0.0012	<0.0014	<0.003	224	<0.0011	<0.0027
Tank No. 22	TK-22-O	Oily sludge	<0.00008	<0.00852	<0.00776	<0.0012	<0.0012	0.00364 J	0.00364 J	<0.0082	<0.0011	<0.0027
Tank No. 23	TK-23-O (mg/kg)	Appears to be diesel	NA	<3.31	<2.83	<0.049	NA	NA	NA	<2.28	<8.44	NA
North Containment Area	Dike North	Water	NA	<0.000324	0.095	0.0028 B	<0.000327	<0.000295	NA	0.045	<0.00108	<0.0027
South Containment Area	Dike South	Water	NA	<0.000162	0.03	0.0031 B	<0.000327	<0.000295	NA	0.00304 J	<0.000538	<0.00027
Hazardous Criteria			0.03	100	6	5	200	200	200	0.5	7.5	10

Table 1
Gulfco Former AST Tank Farm
Tank Sample - RCI/Toxicity Data

Tank No.	Sample ID.	Physical Description	1,1-Dichloroethene	2,4-Dinitrotoluene	Endrin	Heptachlor	Heptachlor Epoxide	Hexachlorobenzene	Hexachlorobutadiene	Hexachloroethane	Lead
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Tank No. 2	TK-2-O	Aqueous Phase	<0.205	<0.579	NA	NA	NA	<0.32	<0.45	<1.05	<0.0013
	TK-2-O	Organic Phase	<0.023	<0.0036	<0.00007	<0.00004	<0.00005	<0.0015	<0.0017	<0.0016	0.043 B
	TK-2-S	Solids- sand, debris, etc.	<0.458	<0.0036	<0.00007	<0.00004	<0.0005	<0.0015	<0.0017	<0.0016	0.0084 B
Tank No. 4	TK-4-A	Oily Water	<0.000205	<0.00464	<0.0000832	<0.0000439	0.00065	<0.00256	<0.00045	<0.00842	0.28
Tank No. 6	TK-6-S	Rust Solids	<0.00916	<0.0036	<0.00007	<0.00004	<0.00005	<0.0015	<0.0017	<0.0016	0.0028 B
Tank No. 13	TK-13-O	Oily sludge	<0.229	<0.0036	<0.00007	<0.00004	0.00057	<0.0015	<0.0017	<0.0016	0.0035 B
Tank No. 14	None	Empty (2 in. of rust solids)	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tank No. 15	TK-15-O	Oily sludge	<0.00916	<0.0036	<0.00007	<0.00004	<0.00005	<0.0015	<0.0017	<0.0016	<0.0013
Tank No. 16	TK-16-O	Oily sludge	<0.00916	<0.0036	<0.00007	<0.00004	<0.00005	<0.0015	<0.0017	<0.0016	<0.0013
Tank No. 17	TK-17-S	Rust solids	<0.00916	<0.0036	<0.00033	<0.00019	<0.00024	<0.0015	<0.0017	<0.0016	0.022 B
Tank No. 18	TK-18-O	Light Organic Phase	<9.16	<0.5339	<0.01182	0.029 J	<0.00862	<0.2179	<0.248	<0.2358	<0.013
Tank No. 19	TK-19-O	Oily sludge	<4.58	<0.0036	<0.00007	<0.00004	<0.00005	<0.0015	<0.0017	<0.0016	0.0056 B
Tank No. 21	TK-21-A	Oily water	<9.16	<0.0036	<0.00007	<0.00004	<0.00005	<0.0015	<0.0017	<0.0016	<0.0013
Tank No. 22	TK-22-O	Oily sludge	<0.00916	<0.0036	<0.00007	<0.00004	<0.00005	<0.0015	<0.0017	<0.0016	<0.0013
Tank No. 23	TK-23-O (mg/kg)	Appears to be diesel	<3.19	NA	NA	NA	NA	NA	<24.9	NA	<0.097
North Containment Area	Dike North	Water	<0.000411	<0.000464	<0.00000832	<0.00000439	<0.00000732	<0.000256	<0.0009	<0.000842	<0.0013
South Containment Area	Dike South	Water	<0.000205	<0.000464	<0.00000832	<0.00000439	0.0000329	<0.000256	<0.00045	<0.000842	0.0044 B
Hazardous Criteria			0.7	0.13	0.02	0.008	0.008	0.13	0.5	3	5

Table 1
Gulfco Former AST Tank Farm
Tank Sample - RCI/Toxicity Data

Tank No.	Sample ID.	Physical Description	Lindane	Mercury	Methoxychlor	MEK	Nitrobenzene	Pentachlorophenol	Pyridine	Selenium	Silver
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Tank No. 2	TK-2-O	Aqueous Phase	<0.00003	0.00004	NA	13.4	<0.452	<1.33	<0.437	0.03 B	<0.0006
	TK-2-O	Organic Phase	<0.00003	0.00037	<0.00032	9.77	<0.0008	<0.0037	<0.0182	<0.0046	<0.0006
	TK-2-S	Solids- sand, debris, etc.	<0.00003	0.00014 B	<0.00032	30	<0.0008	<0.0037	<0.0182	<0.0046	<0.0006
Tank No. 4	TK-4-A	Oily Water	0.00035	0.00017 B	0.0018 J	0.011	<0.00362	<0.011	<0.00349	<0.0046	<0.0006
Tank No. 6	TK-6-S	Rust Solids	<0.00003	0.00013 B	<0.00032	<0.017	<0.0008	<0.0037	<0.0182	0.014 B	<0.0006
Tank No. 13	TK-13-O	Oily sludge	<0.00003	0.00012 B	<0.00032	<0.429	<0.0008	<0.0037	<0.0182	0.006 B	<0.0006
Tank No. 14	None	Empty (2 in. of rust solids)	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tank No. 15	TK-15-O	Oily sludge	<0.00003	0.00039	<0.00032	0.085 J	<0.0008	<0.0037	<0.0182	0.0095 B	<0.0006
Tank No. 16	TK-16-O	Oily sludge	<0.00003	0.00011 B	<0.00032	0.367	<0.0008	<0.0037	<0.0182	0.013 B	<0.0006
Tank No. 17	TK-17-S	Rust solids	0.0185	0.00015 B	<0.00162	<0.017	<0.0008	<0.0037	<0.0182	<0.0046	<0.0006
Tank No. 18	TK-18-O	Light Organic Phase	<0.00556	<0.0048	<0.05816	<17.2	<0.1262	<0.5607	<2.74	0.88 B	<0.006
Tank No. 19	TK-19-O	Oily sludge	<0.00003	0.00008 B	<0.00032	<8.58	<0.0008	<0.0037	<0.0182	0.0064 B	<0.0006
Tank No. 21	TK-21-A	Oily water	<0.00003	0.00012 B	<0.00032	<17.2	<0.0008	<0.0037	<0.0182	<0.0046	<0.0006
Tank No. 22	TK-22-O	Oily sludge	<0.00003	0.00013 B	<0.00032	0.874	<0.0008	<0.0037	<0.0182	0.0067 B	<0.0006
Tank No. 23	TK-23-O (mg/kg)	Appears to be diesel	NA	0.011	NA	<6.25	NA	NA	NA	1.6B	<0.047
North Containment Area	Dike North	Water	<0.00000255	<0.00004	<0.00000214	<0.00217	<0.000362	<0.00106	<0.000349	0.0049 B	<0.0006
South Containment Area	Dike South	Water	<0.00000255	<0.00004	<0.00000214	<0.00109	<0.000362	<0.00106	<0.000349	<0.0046	<0.0006
Hazardous Criteria			0.4	0.2	10	200	2	100	5	1	5

Table 1
Gulfco Former AST Tank Farm
Tank Sample - RCI/Toxicity Data

Tank No.	Sample ID.	Physical Description	Tetrachloroethylene	Toxaphene	Trichloroethylene	2,4,5-Trichlorophenol	2,4,6-Trichlorophenol	2,4,5-TP (Silvex)	Vinyl Chloride
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Tank No. 2	TK-2-O	Aqueous Phase	<0.768	NA	0.851 J	<0.508	<0.525	NA	<0.383
	TK-2-O	Organic Phase	<0.023	<0.00025	1.52	<0.001	<0.0021	<0.0016	0.247 J
	TK-2-S	Solids- sand, debris, etc.	55.7	<0.00025	205	<0.001	<0.0021	<0.0016	<0.01
Tank No. 4	TK-4-A	Oily Water	<0.000768	<0.00275	0.00102 J	<0.00406	<0.00042	<0.00013	<0.000383
Tank No. 6	TK-6-S	Rust Solids	<0.00908	<0.00025	0.027 J	<0.001	<0.0021	<0.0016	<0.00356
Tank No. 13	TK-13-O	Oily sludge	47.7	<0.00025	2.98 J	<0.001	<0.0021	<0.0016	0.988 J
Tank No. 14	None	Empty (2 in. of rust solids)	NA	NA	NA	NA	NA	NA	NA
Tank No. 15	TK-15-O	Oily sludge	<0.00908	<0.00025	<0.011	<0.001	<0.0021	<0.0016	<0.00356
Tank No. 16	TK-16-O	Oily sludge	<0.00908	<0.00025	<0.011	<0.001	<0.0021	<0.0016	<0.00356
Tank No. 17	TK-17-S	Rust solids	<0.00908	<0.00125	<0.011	<0.001	<0.0021	<0.0016	<0.00356
Tank No. 18	TK-18-O	Light Organic Phase	<9.08	<0.045	<10.8	<0.1552	<0.3149	<0.0016	<3.56
Tank No. 19	TK-19-O	Oily sludge	<4.54	<0.00025	<5.4	<0.001	<0.0021	<0.0016	<1.78
Tank No. 21	TK-21-A	Oily water	<9.08	<0.00025	<10.8	<0.001	<0.0021	<0.0016	<3.56
Tank No. 22	TK-22-O	Oily sludge	<0.00908	<0.00025	<0.011	<0.001	<0.0021	<0.0016	<0.00356
Tank No. 23	TK-23-O (mg/kg)	Appears to be diesel	<3.85	NA	<3.55	NA	NA	NA	<7.03
North Containment Area	Dike North	Water	0.00627 J	<0.000275	0.018	<0.000406	<0.00042	<0.00013	<0.000765
South Containment Area	Dike South	Water	<0.000768	<0.000275	<0.000702	<0.000406	<0.00042	<0.00013	<0.000383
Hazardous Criteria			0.7	0.5	0.5	400	2	1	0.2

Table 1
Gulfco Former AST Tank Farm
Tank Sample - RCI/Toxicity Data

Tank No.	Sample ID.	Physical Description	Comments
Tank No. 2	TK-2-O	Aqueous Phase	Total Data
	TK-2-O	Organic Phase	TCLP Data
	TK-2-S	Solids- sand, debris, etc.	TCLP Data
Tank No. 4	TK-4-A	Oily Water	Total Data
Tank No. 6	TK-6-S	Rust Solids	TCLP Data
Tank No. 13	TK-13-O	Oily sludge	TCLP Data
Tank No. 14	None	Empty (2 in. of rust solids)	
Tank No. 15	TK-15-O	Oily sludge	TCLP Data
Tank No. 16	TK-16-O	Oily sludge	TCLP Data
Tank No. 17	TK-17-S	Rust solids	TCLP Data
Tank No. 18	TK-18-O	Light Organic Phase	TCLP Data
Tank No. 19	TK-19-O	Oily sludge	TCLP Data
Tank No. 21	TK-21-A	Oily water	TCLP Data
Tank No. 22	TK-22-O	Oily sludge	TCLP Data
Tank No. 23	TK-23-O (mg/kg)	Appears to be diesel	Total Data (mg/kg)
North Containment Area	Dike North	Water	Total Data
South Containment Area	Dike South	Water	Total Data
Hazardous Criteria			

Table 2
Gulfco Former AST Tank Farm
Tank Sample TPH/PCB Data

Tank No.	Sample ID.	Physical Description	C6-C12	>C12-C28	>C28-C35	Total TPH (C6-C35)	Arachlor-1016	Arachlor-1221	Arachlor-1232	Arachlor-1242	Arachlor-1248
Tank No. 4	TK-4-A	Oily Water	16.7J	130	<26.6	147	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Tank No. 6	TK-6-S	Rust Solids	<100	1,140	1,630	2,770	<1.2	<1.2	<1.2	<1.2	<1.2
Tank No. 13	TK-13-O	Oily sludge	<10	468,000	275,000	743,000	<120	<120	<120	<120	<120
Tank No. 15	TK-15-O	Oily sludge	135,000	719,000	197,000	>99%	<1.2	<1.2	<1.2	<1.2	<1.2
Tank No. 16	TK-16-O	Oily sludge	<20	761,000	512,000	>99%	<1.2	<1.2	<1.2	<1.2	<1.2
Tank No. 17	TK-17-S	Rust solids	<111	880	360	1,240	<1.33	<1.33	<1.33	<1.33	<1.33
Tank No. 18	TK-18-O	Light Organic Phase	961,000	37,800	<50	999,000	<1.2	<1.2	<1.2	<1.2	<1.2
Tank No. 19	TK-19-O	Oily sludge	59,600	441,000	128,000	629,000	<1.2	<1.2	<1.2	<1.2	<1.2
Tank No. 21	TK-21-A	Oily water	<20	51,400	266,000	780,000	<99.3	<99.3	<99.3	<99.3	<99.3
Tank No. 22	TK-22-O	Oily sludge	<20	789,000	449,000	>99%	<1.2	<1.2	<1.2	<1.2	<1.2
Tank No. 23	TK-23-O	Appears to be diesel	260,000	1,230,000	<50	>99%	<1.2	<1.2	<1.2	<1.2	<1.2
North Containment Area	Dike North	Water	<5.42	2.5J	<5.42	2.5J	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
South Containment Area	Dike South	Water	<5.36	<5.36	<5.36	<16.1	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005

Table 2
Gulfco Former AST Tank Farm
Tank Sample TPH/PCB Data

Tank No.	Sample ID.	Physical Description	Arachlor-1254	Arachlor-1260	Comments
Tank No. 4	TK-4-A	Oily Water	<0.0005	<0.0005	mg/L
Tank No. 6	TK-6-S	Rust Solids	<1.2	<1.2	mg/kg
Tank No. 13	TK-13-O	Oily sludge	<120	<120	mg/kg
Tank No. 15	TK-15-O	Oily sludge	<1.2	<1.2	mg/kg
Tank No. 16	TK-16-O	Oily sludge	<1.2	<1.2	mg/kg
Tank No. 17	TK-17-S	Rust solids	<1.33	<1.33	mg/kg
Tank No. 18	TK-18-O	Light Organic Phase	<1.2	<1.2	mg/kg
Tank No. 19	TK-19-O	Oily sludge	<1.2	<1.2	mg/kg
Tank No. 21	TK-21-A	Oily water	<99.3	<99.3	mg/kg
Tank No. 22	TK-22-O	Oily sludge	<1.2	<1.2	mg/kg
Tank No. 23	TK-23-O	Appears to be diesel	<1.2	<1.2	mg/kg
North Containment Area	Dike North	Water	<0.0005	<0.0005	mg/L
South Containment Area	Dike South	Water	<0.0005	<0.0005	mg/L

Table 3
Gulfco Former AST Tank Farm
TK-21-A Sample Total Concentrations - Detected Values

Parameter	Concentration (mg/kg)
VOCs	
1,2-Dichloroethane	663
Benzene	121 J
Chloroform	6,850
Isopropylbenzene (Cumene)	119 J
Methylene chloride	241 J
Toluene	179 J
SVOCs	
2-Methylnapthalene	145 B
Benzaldehyde	123 J
Biphenyl	54.4 J
Bis(2-Ethylhexyl)phthalate	36.5 J
Caprolactum	2,410
Crysene	23.3 J
Fluorene	82.7 J
Phenanthrene	283
Pyrene	85.5 J
Metals	
Barium	7.09
Cadmium	0.062 J
Calcium	304
Chromium	2.28
Iron	1,660
Lead	2.44
Manganese	9.61
Mercury	0.027
Selenium	0.92 J
Silver	0.12 J
TPH (TX 1005)	
>C12-C28	514,000
>C28-C35	266,000
Total TPH	780,000
Pesticides/Herbicides	
Endosulfan I	1.25 J
Endosulfan II	3.72 J
Endrin aldehyde	2.9 J
Endrin ketone	9.6 J
gamma-Chlordane	3.1 J
2,4,5-T	0.446 J

Notes:
1. Only chemicals of interest detected above the sample detection limit are included in
2. Data qualifiers: J = Estimated value for organics. B = detected in blank sample.

Table 4
Gulfco Former AST Tank Farm
North and South Containment Dike Sample Analytical Results

Parameter	Dike North	Dike South
VOCs	**mg/L**	**mg/L**
1,1,1,2-Tetrachloroethane	<0.000965	<0.000482
1,1,1-Trichloroethane	0.031	<0.000461
1,1,2,2-Tetrachloroethane	<0.00024	<0.00012
1,1,2-Trichloroethane	<0.000665	<0.000333
1,1-Dichloroethane	0.00244 J	<0.000237
1,1-Dichloroethene	<0.000411	<0.000205
1,1-Dichloropropene	<0.00058	<0.00029
1,2,3-Trichloropropane	<0.00145	<0.000726
1,2,4-Trichlorobenzene	<0.000422	<0.000211
1,2,4-Trimethylbenzene	0.0037 J	0.00939
1,2-Dibromo-3-chloropropane	<0.00038	<0.00019
1,2-Dibromoethane	<0.000539	<0.000269
1,2-Dichlorobenzene	<0.000801	<0.000401
1,2-Dichloroethane	0.045	0.00304 J
1,2-Dichloropropane	<0.000507	<0.000254
1,3,5-Trimethylbenzene	<0.000422	0.00235 J
1,3-Dichlorobenzene	<0.00063	<0.000315
1,3-Dichloropropane	<0.000511	<0.000255
1,4-Dichlorobenzene	<0.00108	<0.000538
2,2-Dichloropropane	<0.000532	<0.000266
2-Butanone	<0.00217	<0.00109
2-Chloroethylvinyl ether	<0.00109	<0.000547
2-Chlorotoluene	<0.000603	<0.000301
2-Hexanone	<0.000823	<0.000412
4-Chlorotoluene	<0.000661	<0.000331
4-Isopropyltoluene	<0.000242	<0.000121
4-Methyl-2-pentanone	<0.0000996	<0.0000498
Acetone	<0.00382	0.021 J
Acrolein	<0.00403	<0.00201
Acrylonitrile	<0.00646	<0.00323
Benzene	0.011	0.015
Bromobenzene	<0.000641	<0.000321
Bromodichloromethane	<0.000289	<0.000145
Bromoform	<0.000755	<0.000377
Bromomethane	<0.00155	<0.000774
Carbon disulfide	<0.000487	<0.000244
Carbon tetrachloride	0.00889 J	<0.000336
Chlorobenzene	<0.000324	<0.000162
Chloroethane	<0.00115	<0.000574
Chloroform	0.095	0.03
Chloromethane	<0.00129	<0.000645
cis-1,2-Dichloroethene	0.00513 J	<0.000292
cis-1,3-Dichloropropene	<0.00033	<0.000165
Cyclohexane	0.00293 J	0.000936 J
Dibromochloromethane	<0.000455	<0.000228
Dibromomethane	<0.000756	<0.000378

Table 4
Gulfco Former AST Tank Farm
North and South Containment Dike Sample Analytical Results

Parameter	Dike North	Dike South
VOCs (cont'd)		
Dichlorodifluoromethane	<0.000677	<0.000339
Ethylbenzene	0.011	0.00135 J
Hexachlorobutadiene	<0.0009	<0.00045
Isopropylbenzene (Cumene)	0.00453 J	0.000515 J
m,p-Xylene	0.00292 J	0.011
Methyl Acetate	<0.00169	<0.000847
Methyl iodide	<0.000841	<0.00042
Methylcyclohexane	<0.000378	<0.000189
Methylene chloride	0.012 J	0.000765 J
Naphthalene	0.023	0.096
n-Butyl alcohol	<0.05	<0.025
n-Butylbenzene	<0.000561	<0.000281
n-Propylbenzene	<0.000609	<0.000305
o-Xylene	0.00189 J	0.00476 J
sec-Butylbenzene	<0.000598	<0.000299
Styrene	<0.000304	<0.000152
tert-Butyl methyl ether (MTBE)	<0.000358	<0.000179
tert-Butylbenzene	<0.000573	<0.000287
Tetrachloroethene	0.00627 J	<0.000768
Toluene	0.00791 J	0.033
trans-1,2-Dichloroethene	<0.000747	<0.000374
trans-1,3-Dichloropropene	<0.000359	<0.00018
trans-1,4-Dichloro-2-butene	<0.00143	<0.000717
Trichloroethene	0.018	<0.000702
Trichlorofluoromethane	<0.00051	<0.000255
Trichlorotrifluoroethane	<0.00072	<0.00036
Vinyl acetate	<0.000756	<0.000378
Vinyl chloride	<0.000765	<0.000383
Xylene (total)	0.00481 J	0.016
SVOCs		
1,2Diphenylhydrazine/Azobenzen	<0.000204	<0.000204
2,4,5-Trichlorophenol	<0.000406	<0.000406
2,4,6-Trichlorophenol	<0.00042	<0.00042
2,4-Dichlorophenol	<0.000387	<0.000387
2,4-Dimethylphenol	<0.00131	<0.00131
2,4-Dinitrophenol	<0.00112	<0.00112
2,4-Dinitrotoluene	<0.000464	<0.000464
2,6-Dinitrotoluene	<0.00041	<0.00041
2-Chloronaphthalene	<0.000343	<0.000343
2-Chlorophenol	<0.000344	<0.000344
2-Methylnaphthalene	<0.000102	<0.000102
2-Nitroaniline	<0.000267	<0.000267
2-Nitrophenol	<0.000522	<0.000522
3,3'-Dichlorobenzidine	<0.00208	<0.00208
3-Nitroaniline	<0.0004	<0.0004
4,6-Dinitro-2-methylphenol	<0.000284	<0.000284
4-Bromophenyl phenyl ether	<0.000366	<0.000366
4-Chloro-3-methylphenol	<0.000408	<0.000408

Table 4
Gulfco Former AST Tank Farm
North and South Containment Dike Sample Analytical Results

Parameter	Dike North	Dike South
SVOCs (cont'd)		
4-Chloroaniline	<0.000786	<0.000786
4-Chlorophenyl phenyl ether	<0.000346	<0.000346
4-Nitroaniline	<0.000564	<0.000564
4-Nitrophenol	<0.00201	<0.00201
Acenaphthene	<0.000135	<0.000135
Acenaphthylene	<0.0000884	<0.0000884
Acetophenone	0.00633 J	<0.000371
Aniline	<0.000556	<0.000556
Anthracene	<0.000102	<0.000102
Atrazine (Aatrex)	<0.00205	<0.00205
Benzaldehyde	<0.00121	<0.00121
Benzidine	<0.00718	<0.00718
Benzo(a)anthracene	<0.0000796	<0.0000796
Benzo(a)pyrene	<0.00015	<0.00015
Benzo(b)fluoranthene	<0.000165	<0.000165
Benzo(g,h,i)perylene	<0.000141	<0.000141
Benzo(k)fluoranthene	<0.0000662	<0.0000662
Benzoic acid	<0.001	<0.001
Benzyl alcohol	<0.000442	<0.000442
Biphenyl	<0.000341	<0.000341
Bis(2-Chloroethoxy)methane	<0.000241	<0.000241
Bis(2-Chloroethyl)ether	<0.00047	<0.00047
Bis(2-Chloroisopropyl)ether	<0.000528	<0.000528
Bis(2-Ethylhexyl)phthalate	<0.00191	<0.00191
Butyl benzyl phthalate	<0.000356	<0.000356
Caprolactam	<0.00258	<0.00258
Carbazole	<0.000293	<0.000293
Chrysene	<0.0000563	<0.0000563
Dibenz(a,h)anthracene	<0.000257	<0.000257
Dibenzofuran	<0.00032	<0.00032
Diethyl phthalate	<0.000257	<0.000257
Dimethyl phthalate	<0.000206	<0.000206
Di-n-butyl phthalate	<0.000944	<0.000944
Di-n-octyl phthalate	<0.000889	<0.000889
Fluoranthene	<0.000155	<0.000155
Fluorene	<0.00011	<0.00011
Hexachlorobenzene	<0.000256	<0.000256
Hexachlorocyclopentadiene	<0.000597	<0.000597
Hexachloroethane	<0.000842	<0.000842
Indeno(1,2,3-cd)pyrene	<0.000158	<0.000158
Isophorone	<0.00024	<0.00024
m,p-Cresol	<0.000295	<0.000295
Nitrobenzene	<0.000362	<0.000362
n-Nitrosodimethylamine	<0.00101	<0.00101
n-Nitrosodi-n-propylamine	<0.000313	<0.000313
n-Nitrosodiphenylamine	<0.00051	<0.00051
o-Cresol	<0.000327	<0.000327
Pentachlorophenol	<0.00106	<0.00106

Table 4
Gulfco Former AST Tank Farm
North and South Containment Dike Sample Analytical Results

Parameter	Dike North	Dike South
SVOCs (cont'd)		
Phenanthrene	<0.000137	<0.000137
Phenol	<0.000325	<0.000325
Pyrene	<0.0000899	<0.0000899
Pyridine	<0.000349	<0.000349
Metals		
Arsenic	0.012	0.024
Barium	1.17	0.49
Cadmium	<0.00019	<0.00019
Calcium	45.4	7.36
Chromium	0.0028 B	0.0031 B
Hardness	192	34.9
Iron	0.6	1.52
Lead	<0.0013	0.0044 B
Manganese	0.034	0.043
Mercury	<0.00004	<0.00004
Selenium	0.0049 B	<0.0046
Silver	<0.0006	<0.0006
TPH (TX 1005)		
>C12-C28	2.5 J	<0.815
>C28-C35	<0.824	<0.815
C6-C12	<0.249	<0.247
Total TPH (C6-C35)	2.5 J	<1.88
Pesticides/Herbicides		
4,4'-DDD	0.00095	0.00021
4,4'-DDE	<0.00000556	0.00004 J
4,4'-DDT	0.00026	0.00027
Aldrin	<0.00000261	0.00000336 J
alpha-BHC	0.0000466	0.0000113 J
alpha-Chlordane	<0.00000274	<0.00000274
beta-BHC	<0.00000424	<0.00000424
delta-BHC	<0.00000232	<0.00000232
Dieldrin	0.0000427 J	<0.00000471
Endosulfan I	0.00022	0.0000508
Endosulfan II	0.00019	0.000043 J
Endosulfan sulfate	0.00095	0.0000878
Endrin	<0.00000832	<0.00000832
Endrin aldehyde	0.00037	<0.00000484
Endrin ketone	0.000053	<0.00000426
gamma-BHC (Lindane)	<0.00000255	<0.00000255
gamma-Chlordane	<0.00000542	<0.00000542
Heptachlor	<0.00000439	<0.00000439
Heptachlor epoxide	<0.00000732	0.0000329
Methoxychlor	<0.00000214	<0.00000214
Toxaphene	<0.000275	<0.000275
2,4,5-T	<0.00015	<0.00015
2,4,5-TP (Silvex)	<0.00013	<0.00013
2,4-D	<0.00027	<0.00027

Table 4
Gulfco Former AST Tank Farm
North and South Containment Dike Sample Analytical Results

Parameter	Dike North	Dike South
PCBs		
Aroclor-1016	<0.000125	<0.000125
Aroclor-1221	<0.000115	<0.000115
Aroclor-1232	<0.0001	<0.0001
Aroclor-1242	<0.000125	<0.000125
Aroclor-1248	<0.000065	<0.000065
Aroclor-1254	<0.000105	<0.000105
Aroclor-1260	<0.00012	<0.00012
TDS/TSS		
Total Dissolved Solids(TDS)	976	973
Total Suspended Solids	15	11

Notes:

J = Estimated value for organics.
B = Estimated value for metals.

Table 5
Gulfco Former AST Tank Farm
Tank Content Projected Quantities

Tank No.	Description	Projected Quantity[1] (gallons)[2]
Tank No. 2	Organic/Aqueous Mixture Solids - sand, debris (cy)	1,600 10
Tank No. 4	Oily Water	13,000
Tank No. 6	Rust Solids (cy)	106
Tank No. 10	Empty	0
Tank No. 13	Oily sludge	3,000
Tank No. 14	Empty (2 in. of rust solids)	0
Tank No. 15	Oily sludge	40,000
Tank No. 16	Oily sludge	2,500
Tank No. 17	Empty (Minimal rust solids)	0
Tank No. 18	Light Organic Phase	3,000
Tank No. 19	Oily sludge	8,000
Tank No. 21	Oily water	55,500
Tank No. 22	Oily sludge	6,000
Tank No. 23	Appears to be diesel	375
Tank No. 100[3]	Empty	0
Totals	Liquid (gals) Solids (cy)	132,975 116

Notes:

[1] Projected quantity based on CHESI field measurements (12-06) and LTE, 1999 tank volumes.

[2]Quanitities are in gallons unless listed otherwise (cy of solids in Tank Nos. 2 and 6).

[3]Tank No. 100 (empty tank) removed by Hurricane Ike storm surge in September 2006.

Table 6
Gulfco Former AST Tank Farm
Potential Off-site Tank Content Management Facilities

Name	Type	Location	Permit(s)
Clean Harbors Environmental Services	Fuels Blending, Incinerator	Deer Park, Texas	TXD055141378
Waste Management - Coastal Plains	Landfill	Alvin, Texas	MSW Permit # 1721A
Waste Management - Lake Charles	Landfill	Sulphur, Louisiana	LAD000777201

FIGURES

Note:
Tank numbers, except 100, from LTE, 1999. Tank 100 (empty tank) removed by Hurricane Ike storm surge in September 2008.

Source of photo: H-GAC, Texas aerial photograph, 2006.

Approx. Scale in Feet

0 15 30

GULFCO MARINE MAINTENANCE
FREEPORT, BRAZORIA COUNTY, TEXAS

Figure 1

FORMER AST TANK FARM AREA MAP

PROJECT: 1352	BY: ZGK	REVISIONS
DATE: DEC., 2009	CHECKED: EFP	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS